POPULATION CHANGE IN SOUTHEAST ASIA

The **Southeast Asia Population Research Awards Program** (SEAPRAP) was established in 1974 with the following objectives: (i) to strengthen the research capabilities of young Southeast Asian social scentists and to provide them with technical support and guidance if required; (ii) to increase the quantity and quality of social science research on population problems in Southeast Asia; and (iii) to facilitate the flow of information about population research developed in the program as well as its implications for policy and planning among researchers in the region, and between researchers, government planners and policy makers. These objectives were pursued mainly through a system of research awards to qualified applicants. The selection of awardees was made twice a year. In addition, results of research projects were circulated under the SEAPRAP Research Reports series to relevant institutions and individuals. Between 1974 and 1981, when SEAPRAP formally ceased operations, a total of 116 reports were completed.

The **Institute of Southeast Asian Studies** was established as an autonomous organization in May 1968. It is a regional research center for scholars and other specialists concerned with modern Southeast Asia. The Institute's research interest is focused on the many-faceted problems of development and modernization, and political and social change in Southeast Asia.

The Institute is governed by a twenty-two member Board of Trustees on which are represented the National University of Singapore, appointees from the government, as well as representatives from a broad range of professional and civic organizations and groups. A ten-man Executive Committtee oversees day-to-day operations; it is chaired by the Director, the Institute's chief academic and administrative officer.

POPULATION CHANGE IN SOUTHEAST ASIA

edited by
WILFREDO F. ARCE and GABRIEL C. ALVAREZ

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Foreword

The Southeast Asia Population Research Awards Program (SEAPRAP) was inaugurated in 1974 following a keenly felt need for an arrangement or mechanism that would provide modest sums of money, in the form of grants, to small-scale, well-focused research projects of not more than 12 months duration. Special preference was to be given to graduate students and younger staff members of rural and non-metropolitan universities. The basic aim was not only the generation of worthwhile research and publication but also the widening of the experiences of the individual researchers, as well as their further professional development.

Between 1974 and 1982, when it formally ceased to exist, SEAPRAP made 125 awards out of a total of more than 400 applications received from almost all parts of Southeast Asia. Even while the Program was being wound down, enquiries continued to pour in for information on further awards. This only underlined the continued need for a program like SEAPRAP. It is all the more regrettable, therefore, that it has not been possible to continue the fruitful work that has been initiated. Needless to say, it is hoped that the situation will not continue for too long. The opportunity still exists for the work to continue — the SEAPRAP Committee has not been formally disbanded, the members unanimously agreeing to stay in touch. This is just another manifestation of how committed the individual Committee Members have been to SEAPRAP and how generously they have given their time to the Program. It is thus only fitting that the deep gratitude of SEAPRAP and of myself personally to the Committee be recorded here. Likewise our thanks for the abiding interest in and support of the Program by both the IDRC and the Ford Foundation and their officials. The Committee and I have received unstinting cooperation and help from the three successive coordinators of the Program and I would, on behalf of the Committee, like to express our appreciation of this to Pedro Flores, Wilfredo Arce, and Jesucita Sodusta. Thanks are also due to Dr Wilfredo Arce and Dr Gabriel Alvarez for their selection and editing of the papers that comprise the volume that follows.

It is possible that purists will find the quality of the individual chapters in the volume variable. This, however, is only natural in a work and enterprise of this nature. What is perhaps more important is that an even greater encouragement has been provided to younger researchers, particularly to those who do not have easy access to research funds or sophisticated facilities or professional advice. In this respect — and I am sure the editors will agree with me — it is perhaps only right that this volume be dedicated to these younger researchers and their efforts.

20 January 1983

Professor K.S. Sandhu
Director
Institute of Southeast Asian Studies

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THE SOUTHEAST ASIA POPULATION RESEARCH AWARDS PROGRAM (SEAPRAP), 1974-1981: AN INTRODUCTION

Wilfredo F. Arce and Gabriel C. Alvarez

This book presents in a more formal volume, albeit limited by space considerations, a set of SEAPRAP grantees' studies of population issues in the Southeast Asian region, undertaken by grantees of the Southeast Asia Population Research Awards Program (SEAPRAP). The volume is thus basically a collection of selected and condensed research reports. The strengths and weaknesses of these reports — indeed of other reports derived from any of the SEAPRAP projects and published elsewhere — is better appreciated when viewed from the perspective of what the Program is about.

This introductory paper attempts to provide that perspective. The first part presents a summary description of SEAPRAP as an organization. The second part describes the people for whom SEAPRAP was created, namely, the young social scientists who undertook research with funding from the Program or who otherwise applied for funding. The years have taken their toll on the data on file, and no new set of data has been gathered. However, the information that remains does reveal something worth reporting about the young social scientists that SEAPRAP had contact with. The third and last part summarizes the research concerns of the awardees. It also introduces the awardees' research reports that are presented in this volume.

It should be clear that the main purpose of this introductory paper is to describe, not evaluate. The individuals who were working with the Program are shamelessly proud of it and make no pretense at being able to judge the Program without bias; hence, conclusions on the effectiveness (or lack of it) of the Program are minimized. Instead, two evaluations that were made by individuals who were otherwise not connected with the Program are included in the appendices.

THE BACKGROUND

It is not necessary to go deeply into the events that led to the formation of the Program. Suffice it to say that representatives of the Ford Foundation and the International Development Research Center (IDRC), alert to the needs of the region and open to suggestions from knowledgeable individuals in it, provided the initial impetus for the formation of SEAPRAP. During 1972 and 1973 Lyle Saunders, Ozzie D. Simmons, and Carl Friesen, in intermittent discussions with various Southeast Asian social scientists, began conceptualizing the outline of the Program. It would provide grants for relatively small, well-focused research projects of one year's duration and costing a maximum of US$7,500 per project. The target audience would consist of young university faculty members, graduate students, and staff members of agencies involved in population programs. Preference would be given to applicants working outside metropolitan areas. Research proposals and reports could be written in the national language of the author. The development of an individual's skills would be given as much weight as the substance of the project, and for this purpose the young social scientist could avail himself of the consultative assistance of more experienced researchers should he or the professionals managing the Program decide that this would be both useful and feasible. The Program would be offered to nationals of the countries of Southeast Asia, namely,

Burma, Indonesia, the Khmer Republic, Laos, Malaysia, the Philippines, Singapore, Thailand, and Vietnam.[1]

Convinced of the need for the emerging Program, the two foundations made the decision to support it. Events moved swiftly, and by April 1974 both foundations were ready to provide funding for the Program and had identified a group of consultants and a coordinator.

The individuals involved had been among those with whom the initial discussions on the Program were held. They were Amphon Namatra of Chulalongkorn University; Rodolfo A. Bulatao of the University of the Philippines; Nathaniel Iskandar of the University of Indonesia; Kernial S. Sandhu of the Institute of Southeast Asian Studies, and Yip Yat Hoong of the University of Malaya. They constituted an ad hoc committee that met on 21-23 May 1974, with Pedro V. Flores, formerly of Silliman University, who had been designated Project Coordinator by IDRC, Simmons representing the Ford Foundation, and Nihal Kappagoda representing IDRC. In this meeting the fundamental objectives, structure, and activities of SEAPRAP were set, and a wide range of details and issues affecting the Program were discussed and/or decided upon. At the end of it SEAPRAP was truly formed. Control at the highest level was assumed by the ad hoc committee, now formally called the Program Committee, with Sandhu as Chairman. As part of the move to make the program Southeast Asian in character, it was thought that the base should be a Southeast Asian institution. At the time, however, it was expedient for its offices to remain at the IDRC Regional Office in Singapore.

THE SEAPRAP ORGANIZATION

The meeting participants agreed on the following statement of the Program objectives:

1. To strengthen the research capabilities of young Southeast Asian social scientists, and to provide them with technical support and guidance if required;
2. To increase the quantity and quality of social science research on population problems in Southeast Asia; and
3. To facilitate the flow of information about population research developed in the Program as well as its implications for policy among researchers in the region, and between researchers, government planners, and policy makers.

Later on, the Program would be criticized adversely for not delineating more precisely the range of population issues that it considered to fall within its scope of interest (see comments reported by Rixhon 1977: 17-19). But the Program Committee adhered to its original decision to keep the research topics deliberately wide-ranging; it only specified the exclusion of topics that would legitimately fall under reproductive biology. However, as a guide for interested individuals the printed announcement included the following list of "illustrative research areas":

1. Factors contributing to or related to fertility regulation and family planning programs; familial, psychological, social, political, and economic effects of family planning and contraception.
2. Antecedents, processes, and consequences (demographic, cultural, social, psychological, political, and economic) of population structure, distribution, growth, and change.
3. Family structure, sexual behavior, and the relationship between child-bearing patterns and child development.

[1]This informal summary of the more specific, lower-level aims of the Program is a slightly modified version of a statement written by Pedro V. Flores. The formal statement of objectives, the list of "illustrative research areas" as well as the set of criteria for selecting awardees appear in SEAPRAP's printed announcement.

4. Inter-relations between population variables and the process of social and economic development (housing, education, health, quality of the environment, etc.).
5. Population policy, including the interaction of population variables and economic policies, policy implications of population distribution and movement with reference to both urban and rural settings, and the interaction of population variables and law.
6. Evaluation of on-going population education programs and/or development of knowledge-based population educational programs.
7. Incentive schemes — infrastructures, opportunities; overall economic and social development programs.

The responsibility for achieving the program objectives and otherwise ascertaining that the program was functioning as conceived rested on the Program Committee. The Committee thus assumed as its primary function that of formulating policy, reviewing it regularly, and making revisions on it as necessary. Its second major function was to examine and judge applications and select the program awardees. Aside from these two major responsibilities, Committee members also served as program representatives in their respective countries, facilitated for the Program Coordinator (see below) contacts with individuals and institutions or undertook to make these contacts themselves, and provided technical consultation on proposals. Each Committee member was originally expected to serve a fixed term of two years. However, this norm was abandoned later as considerations of continuity and teamwork began to have a higher priority than the impersonal limiting rule of tenure.

Formal Committee meetings were held twice a year, and it was at these meetings that, as a group, Committee members performed the major functions with which they were charged. However, individual members could be and were consulted, or otherwise called upon for assistance, at various other times.

The Program Coordinator assumed the major responsibility for assisting the Program Committee in its tasks, and for promoting the program, processing applications for grants for eventual evaluation by the Program Committee, administering and monitoring each award from beginning to end, ascertaining that program output in terms of the research reports were reproduced and circulated regularly and expeditiously, and performing all the other duties that are expected of an executive officer of the program on a day-to-day basis. In his duties the Program Coordinator was supported by a Program Assistant.

Throughout its lifetime, SEAPRAP's operations had great stability. Nonetheless, some significant changes did occur. One was the unfortunate passing away of Iskandar in 1976. His place in the Committee was later assumed by Masri Singarimbun of Gadjah Mada University. In April–June 1977 a mid-term evaluation of the program was undertaken by Gerard Rixhon (1977). SEAPRAP's performance in achieving its three formal objectives was assessed, as were the mechanisms used in achieving them, namely, the administrative procedures, the Program Committee's functions, the Program Coordinator's functions, the adviser-advisee relationship, and the provision for the use of the grantees' national language in the writing of project proposals and reports. Rixhon's findings, complemented by a separate evaluation undertaken by the Project Coordinator were considered at length in the subsequent Program Committee meeting and taken into account in discussions of program policy. One of the more immediate results was the revival of the idea that SEAPRAP should be based in a Southeast Asian regional institution. Accordingly, in June 1978, the SEAPRAP program office was transferred to the Institute of Southeast Asian Studies. In its new home the Program shared its coordinating unit with another Institute-based program, the Southeast Asian Studies Program (SEASP), thus reducing administrative costs. Flores remained with the

IDRC and the Program Coordinator's job passed on to Wilfredo F. Arce, who was on leave from the Ateneo de Manila University's Department of Sociology and Anthropology.

One issue that was discussed at some length had to do with the substantive contribution that research projects were making, either to the stock of knowledge on population issues or to policy making and program planning. At the end of it, the Committee reaffirmed that, given SEAPRAP's clientele, which consisted of young and relatively inexperienced social scientists, the objective of producing a desirable substantive report *per se* had to be balanced by the objective of providing training experience in research for the grantee.

An appreciation of the broader norms and procedures that SEAPRAP followed is better obtained from a description of their operation in the annual cycle of SEAPRAP activities.

These activities began in late November, when the printed announcement and a form letter were mailed from the Singapore office to various institutions and individuals in the region. The announcement described SEAPRAP research awards, and invited applications from qualified individuals for these awards. The form letter called attention to the next deadline for submitting all applications (in this case 15 March), and asked the recipient to give the announcement as wide publicity as possible and to encourage qualified individuals to apply for the grants. At the same time separate letters were sent to individuals who had made more recent inquiries, or who had otherwise indicated interest in applying for grants, or who knew others who had this interest.

By the second week of December the Program Coordinator wrote the grantees with on-going projects and selected individuals — such as chairmen of social science departments in tertiary educational institutions, officials in population programs, advisers of grantees — requesting appointments to see them in late January or early February. The grantees were told that the visit constituted part of the monitoring system of SEAPRAP-financed projects, as indeed it was; but they were also asked for help in arranging meetings between potential applicants for grants and the Program Coordinator.

The actual travel through the region took about three weeks. It was helpful to SEAPRAP because the Program Coordinator came face to face with young social scientists undertaking projects, with potential grantees, and with facilitators of projects. It was helpful to the latter as well, because they could discuss the program as it affected them on a face to face basis with a program representative.

As the 15 March deadline approached, the Coordinator and his Assistant tended to spend more and more of their time attending to applications as they arrived. The papers were checked for completeness; letters of acknowledgement and/or requests for missing information were sent. Proposals written in the national language (true of many Thai proposals and of almost all Indonesian proposals) were translated to English by knowledgeable but non-commercial translators. The Program Coordinator read each proposal carefully and wrote his evaluation and/or added other information about the applicant for the benefit of Program Committee members.

A photocopy of all application papers and various reports and summaries were sent to each of the Program Committee members at least three weeks before the scheduled meeting. At this point, work on the application papers and related reports shifted to the Program Committee members. They read each application and proposal carefully, prepared notes for the expected discussion on them, and gave the submission a rating before the meeting.

The first meeting of the year was held during the first week of May, the venue being rotated among the different countries of the region. Each meeting usually lasted for two days. The first day and, in some cases, part of the second day, was devoted to discussing

the various applications, and deciding on who were to receive awards and what conditions, if any, were to be imposed. The criteria used in judging research proposals were the following:

1. relevance of the proposed research to current issues in population in the particular countries of Southeast Asia;
2. its potential contribution to policy formulation, program implementation, and problem solving;
3. adequacy of research design, including problem definition, method of procedure, proposed mode of analysis, and knowledge of literature;
4. feasibility of the project, including time requirement, budget, and availability, accessibility, and reliability of data;
5. applicant's potential for further development.

The second part of the meeting was devoted to discussion/resolution of policy issues. Towards the end of the program, when ideas for extending it or putting up a successor program were discussed, the policy part of the meetings was generally extended to another day.

As a matter of routine, one representative from each of the two funding agencies were invited to the meetings. Simmons represented the Ford Foundation; when he was reassigned to New York, John C. Cool took his place. Jacques Amyot and, later, Flores, represented IDRC. The representatives could not vote on decisions, but they participated fully in the discussions and their contribution in this regard was always appreciated.

Applicants for awards were informed of the results immediately afterwards. The greater number of letters went to those whose proposals were summarily rejected for being weak on most of the criteria. Other proposals that were rejected showed promise of improvement if appropriate revisions could be made. In their cases, the proponents were given the necessary feedback and were encouraged to undertake the revisions, usually with the suggestion that they do so in consultation with a more senior social scientist in the area. Some applicants accepted the suggestions, re-submitted their proposals, and went on to complete their projects successfully. Among those whose proposals were approved, a few were considered ready for immediate implementation; in these cases formal grant letters were simply sent for acceptance by the proponents. For most of the proposals that were approved the Committee attached conditions that needed to be fulfilled before a formal award could be made; for instance, that certain parts of the research design be strengthened or clarified, or that the proponent accept the services of an adviser whose expertise could help improve various parts of the research process, or the proposed budget needed adjustments. These conditions were conveyed to the proponents, and the issues were resolved by mail, usually within one month. In one case no agreement was reached and the application was voluntarily withdrawn.

The assistance of senior social scientists to serve as advisers to grantees was sought at this point. During the lifetime of the program a total of 35 advisers gave their assistance in 48 projects at virtually no expense to the program. In this regard the cross-national composition of the Program Committee was an advantage because the members facilitated the identification of potential advisers or the request for their assistance for specific grantees. The advisership system was considered one of the strong points of the program.

By July, the awards for the first round in the annual cycle would have been finalized. Prior to this time, however, during the last week of May, the work for the second round of awards would have begun. Activities identical to those described above and undertaken at the same pace would have taken place. The deadline for submitting all applications would be 15 September, and all awards would be finalized in January of the following year, at the latest. Thus, it usually took some fourteen months to complete two

rounds of awards. However, activities for the two rounds overlapped in time and funding decisions on projects considered during those rounds took place within one year. Hence, program planning was made in terms of an annual cycle consisting of two rounds of awards.

Other continuing tasks were fitted in and undertaken throughout the awards cycle. One of the important tasks was the publication of the SEAPRAP Research Reports series. The purpose of the series was to circulate as quickly as possible and with the minimum processing and costs the research reports completed by the grantees. If the original was in another language the published work under the series was translated into English, given some technical editing, reproduced by stencil, and bound with a printed cover. About 200 copies of each issue were mailed free of charge to individuals, appropriate university entities, and population and family planning agencies.

Besides, the routine tasks of administering grants were attended to as a matter of course. These usually consisted of responding to requests for information or payment, sending regular reminders to grantees, corresponding with third parties — referees, advisers, superordinates — who could assist the grantee in the successful conclusion of a project.

Towards the end of the program, a fair amount of time was spent by program-connected personnel in formulating proposals, and undertaking the necessary follow-up correspondence and meetings with funding agency representatives, for the possible continuation of SEAPRAP.

The most effective means of conveying information on SEAPRAP to grantees, prospective grantees, advisers, university officials, and officials of population programs, and obtaining relevant information from them in return was face to face contact; for the most part, this was done by the Program Coordinator during his duty travel. Given the geographical coverage of the program, however, this medium was also the most expensive. Hence, maximum use was also made of the mail, telegram, and telephone systems.

THE RESEARCHERS

During SEAPRAP's first year of operation applications were received from Burma and the Indochinese states of the Khmer Republic, Laos, and South Vietnam in addition to Indonesia, Malaysia, the Philippines, Singapore, and Thailand. After 1975, however, only the last five mentioned countries were effectively participating in the program through the regular submission of individual applications. For the most part, therefore, further analyses relative to the awards will be confined to these five countries.

The Applicants and Awardees

The first selection session was held in December 1974, the twelfth and last in May 1980. The lifetime total of applications received from nine Southeast Asian countries was 434. An average of 35 applications were thus examined per meeting: the number considered in one meeting ranged from six to twelve, the average being ten. A total of 125 awards were made by the program during its lifetime. The total cost of these awards was US$437,570. Individual awards ranged from US$1,541 to US$6,573 and averaged US$3,501, sums that are appreciably lower than the advertised normative maximum of US$7,500 per grant. The data on applications received and awards made are summarized in Table 1.

One pattern that is immediately evident in the summary is that the order of countries in terms of the number of applications received is as follows: Indonesia, the Philippines, Thailand, Malaysia, and Singapore. Parenthetically, this order is consistent with the population sizes of the five countries. On the other hand, the order is completely reversed when the countries are ranked in terms of the awards made as a percentage of total

TABLE 1
Applications Received and Awards Made, by Country, December 1974 Through May 1980*

Country	Applications		Awards		Awards as % of Applications
	No.	%	No.	%	
Burma	1	0.2	0	0	0
Indonesia	184	42.4	32	25.6	17.3
Khmer Republic	1	0.2	0	0	0
Laos	1	0.2	0	0	0
Malaysia	37	8.5	18	14.4	48.6
Philippines	99	22.8	30	24.0	30.0
Singapore	5	1.2	3	2.4	60.0
Thailand	96	22.1	42	33.6	43.8
Vietnam (South)	10	0.3	0	0	0
TOTAL	434	99.9	125	100.0	

* Excluded: One application each from Bangladesh, Fiji, and the United States; all indications were that the applicants involved were not Southeast Asians and were, therefore, not eligible for awards. Also, one application from Malaysia which received approval for an award but was withdrawn before the award could be finalized; and one institutional application from the Philippines.

applications. As the presentation proceeds, other patterns that may be associated with this will be noted.

It should be reiterated that the data presented in Table 1 use applications and awards as units of enumeration. The number of *individuals* involved differs somewhat, although the pattern of distribution remains basically the same. Table 2 summarizes the relevant data and takes account of the following information:

1. Some applications were initially rejected because of weaknesses noted in the proposed project; however, the applicants were encouraged to correct these

TABLE 2
Applicants, Awardees, and Awardees as Percentage of Applicants, by Country, December 1974 Through May 1980*

Country	Applicants		Awardees		Awardees as % of Applications
	No.	%	No.	%	
Burma	1	0	0	0	0
Indonesia	151	38.4	32	25.0	21.2
Khmer Republic	1	0	0	0	0
Laos	1	0	0	0	0
Malaysia	33	8.4	17	13.3	51.5
Philippines	99	25.2	32	25.0	32.3
Singapore	4	1.0	3	2.3	75.0
Thailand	94	23.9	44	34.4	46.8
Vietnam (South)	9	2.3	0	0	0
TOTAL	393	99.2	128	100.0	

* Excludes one Malaysian whose application was initially approved but was withdrawn before the award could be finalized, and one application from an institution in the Philippines.

weaknesses (the appropriate feedback being provided), and to submit the revised version in the next round of awards. Among these second submissions ten were approved; one was a joint application by two individuals. The number of applications involved, therefore, was 22 but the number of individuals only

2. On the other hand, ten re-submissions were not approved. The number of these applications involved, therefore, was 22 but the number of individuals only 12.
3. Some applicants submitted two or three applications at different times with different proposals. There were 12 such individuals. Each of them received one award, but among them they submitted a total of 27 applications.
4. A total of 17 individuals submitted two or more different applications each, either at the same time or at different times. All these applications, totalling 35, were rejected.
5. On the other hand, two individuals submitted two applications, both of which were accepted. One of these applications was made jointly with a third individual.
6. Other joint applications included two pairs which received awards, one from a trio which also received an award; and five pairs and one quartet which were rejected.

In Table 2 multiple applications from one individual are reduced to one. All individuals who received two awards are counted once, as awardees. Every individual who submitted two or more applications but received an award in one of them is counted once as awardee. All other individuals are treated as having applied only once. On the other hand, all individuals included in one joint application are counted separately.

Residence

Tables 3 and 4 provide some measure of the extent to which SEAPRAP was able to attract applications from and make awards to scholars outside each country's metropolitan area. Of the 381 applications received 243, or 64 percent, originated from areas outside the national metropolises. In terms of awardees "other areas" also accounted for the highest proportion, 66, or 54 percent, of the 123 awards made to applicants within the region. (The applications that originated from abroad are not considered here since the eventual places of residence of the individuals concerned are not known.)[2]

TABLE 3
Area of Residence, by Country, by Successful and Unsuccessful Applicants

Country	Successful Applicants			Unsuccessful Applicants		
	National Metropolis	Other Areas	Abroad	National Metropolis	Other Areas	Abroad
Indonesia	2	30	0	6	113	0
Malaysia	13	2	2	9	0	7
Philippines	11	21	0	14	51	2
Singapore	3	0	0	1	0	0
Thailand	28	13	3	31	13	6
TOTAL	57	66	5	61	177	15

[2]Applications from Southeast Asian nationals studying in universities abroad were considered eligible for awards. Invariably the applications received asked for support in completing the doctoral dissertation. In judging these applications the Program Committee adopted a number of important norms in addition to the publicly announced ones. First, they were considered of low priority, the rationale being that sponsors of these students had the obligation to provide material support for the completion of the doctoral dissertation. Secondly, there had to be sufficient evidence that the applicant was returning to the Southeast Asia region upon completion of the degree. Thirdly, in the event that the application was approved for funding, the program would provide support for the research project only; this norm precluded, in particular, tuition and related university fees, maintenance stipend, and travel support to and from the region.

TABLE 4
Number of Areas In-country Where Successful and Unsuccessful Applicants Reside*

Country	No. of Areas	
	Successful	Unsuccessful
Indonesia	20	31
Malaysia	2	1
Philippines	11	24
Singapore	1	1
Thailand	3	4
TOTAL	37	61

* Excludes five successful and 15 unsuccessful applicants residing abroad.

Evidently SEAPRAP's success in attracting applications was greatest in Indonesia and the Philippines. In Indonesia the 151 applications came from 31 different places, with slightly more than five percent from the capital city of Jakarta. Of the 32 successful applicants 94 percent also came from places outside Jakarta. In the Philippines 97 applications were received from individuals residing in 24 different places in the country; 85 percent of these applications originated from areas outside Metro Manila. Similarly, of the 32 awardees 66 percent were residents of provincial areas. In contrast, nearly all of the applications from Thailand originated from Bangkok and Chiang Mai; in Malaysia nearly all applications came from the Kuala Lumpur area, with two from Penang.

These patterns are understandable when one considers the distribution of tertiary educational institutions (which yielded most of the individuals submitting proposals) in the five countries. Singapore, a small city-state, had two universities during the time that SEAPRAP was in operation. As for Malaysia, aside from the agricultural university in Serdang, the country has a university in Kuala Lumpur and another in Penang. Tertiary institutions are greater in number in Thailand. But none of these three countries have the proliferation of colleges and universities reaching out to more areas outside the nation's metropolis than Indonesia and the Philippines.

This proliferation also probably provides part of the explanation for the awards as percentage of applications pattern noted in Table 1. However, almost any such explanation will require more elaboration and supporting data than would be warranted in this brief presentation; hence, it is better to leave the matter at the suggestion level.

Education

Table 5 presents a summary of the educational background of the awardees and, to a certain extent, the applicants who were not given awards. A "doctorate degree" refers to the Ph.D., D.Ed., D.P.H., and D.P.A. "Graduate studies" includes any formal academic work after the first degree and before the doctorate degree. The category includes, in particular, the Master's degree and, in Indonesia, the *doctorandus* and the *sarjana* as well. The "professional degree" category is included for Indonesia because some applicants in that country presented degrees either in engineering or medicine as their sole formal qualification. The "first degree" is the bachelor of arts/science degree in the American system, and includes the *sarjana muda* for Indonesia. An "undergraduate" is someone who has not completed this degree.

As explained previously the Program introduced a deliberate bias in favor of beginning researchers. This, plus the need to maintain an acceptable research standard, resulted in applicants with graduate-level training being considered more favorably than

TABLE 5
Highest Education Achieved, by Country and by Successful and Unsuccessful Applicants

Country & Education	Applicants	
	Successful	Unsuccessful
Indonesia		
Doctorate degree	0	2
Graduate studies	28	86
Professional degree	0	8
First degree	3	9
Undergraduate	0	3
Unknown	1	11
TOTAL	32	119
Malaysia		
Doctorate degree	2	2
Graduate studies	12	7
First degree	3	2
Unknown	0	5
TOTAL	17	16
Philippines		
Doctorate degree	0	7
Graduate studies	32	30
First degree	0	0
Unknown	0	22
TOTAL	32	59
Singapore		
Doctorate degree	0	0
Graduate studies	3	1
First degree	0	0
Unknown	0	0
TOTAL	3	1
Thailand		
Doctorate degree	8	3
Graduate studies	34	27
First degree	2	0
Unknown	0	20
TOTAL	44	50

those with higher or lower educational background. Thus, an applicant with a doctorate degree was generally considered over-qualified unless the degree had been obtained less than three years prior to application. The paucity of awardees with doctorate degrees will thus be understandable. By the same token, awardees whose academic training consisted only of the first degree should be considered exceptional. No other patterns in the table seem sufficiently remarkable to merit pointing out.

However, a related set of data should be cited. The grantees were classified into those who had completed their education entirely in their home countries and those who had been educated abroad. The data show that, almost invariably, education abroad meant studies in Europe, North America, and Australia. As a group, the awardees are largely

home-grown in that 60 percent of them obtained their education entirely in their home countries. But when the group is broken down into nationalities different patterns emerge. Of the Indonesian grantees 16 percent had studied abroad; so did six percent of the Filipinos, 35 percent of the Malaysians, 73 percent of the Thais, and all of the Singaporeans. Relating these data to those presented in Tables 1 and 2, it is clear that the nationalities with higher rates of awardees relative to applications also have higher percentages of awardees who were educated outside their home countries.

Thesis Versus Non-Thesis Projects

The Program considered graduate students who were about to undertake their research for the thesis or dissertation as one important category of constituents. Indeed 40 thesis writers or 31 percent of the total awardees received assistance from the Program. Nonetheless the response in this regard varied from country to country. In Indonesia only one (three percent) of the total number of awardees was a thesis writer. Over 20 percent of awardees from Thailand were thesis writers. The percentage goes to nearly half (47 percent) in the case of Malaysia. On the other hand, the awards to Filipinos went mostly to thesis writers (63 percent), and in Singapore two of the three awardees were in this category.

Completion Record

The record of completion of projects, as reported during Program Committee meetings, was always considered good. Unfortunately, as this article is being written, the data in this regard is no longer complete. In the absence of such data it can only be said that there were probably as many grantees who completed their projects on schedule as those who did not.

Sex, Age, and Marital Status

To conclude this description of the grantees as individuals some very basic characteristics should be mentioned. Males were predominant (72 percent of all grantees), but, as with some other characteristics, the distribution varied appreciably among the different countries. In Indonesia almost all of the awardees were male (94 percent), while Malaysia and Thailand had close to even distribution between the two sexes (47 percent male in Malaysia and 52 percent male in Thailand). But the Philippine grantees were predominantly female (67 percent) and all three Singaporean grantees were female. The marital status of the grantees in the five countries were as follows: Indonesia, 91 percent married; Malaysia 41 percent (of which two are unknown), the Philippines 50 percent, and Singapore 100 percent.

The deliberate bias in favor of beginning social scientists in the awarding of grants were augmented by an age criterion, the norm being fixed at about 35 years. The extent to which this norm was followed may be seen from the record itself. The grantees as a whole ranged in age from 23 to 39 years old; the mean was 31 years. In Indonesia the age range was 26 to 39 years, the mean 34 years. In Malaysia the equivalent figures were 23 to 36 and 27 years; the Philippines 23 to 38 and 29 years; Singapore 25 to 36 and 30 years; and Thailand 23 to 40 and 32 years.

Utilization

If only for the record, it is important to make a statement on how the research results found by the grantees were utilized. To begin with, one of the major objectives of the Program, as originally conceived, was utilitarian, i.e., to generate research and analysis that should be fed back to individuals involved in the planning and implementation of population programs in the region. However, the mid-term evaluation alluded to earlier (Rixhon 1977) found this objective to have been marginally achieved; it also indicated

the conceptual emphasis on this objective to be unrealistic when the level of training and experience in research of the clientele is taken into account. In fact, the evaluation found that, in general, the Program's main impact lay in the opportunity it provided young social scientists for improving their research skills, and that this was probably the more sensible direction to continue to follow. The Program accepted this part of the evaluation and introduced no new effort to achieve the utilization part of the original objectives.

From the records there are no clear indicators of the extent to which SEAPRAP research reports were utilized for population program purposes. It may nonetheless be pertinent to mention that 91 percent of awardees were affiliated with universities at the time they applied for grants; only about six percent were evidently involved in population programs; the remaining awardees had other institutional affiliations. The mailing list for SEAPRAP Research Reports should also be mentioned. It indicates that the bulk of the reports, distributed free of charge, went (mainly upon request) to universities, and only about five percent to population program agencies. The rest of the copies went to foundations, research institutes, and SEAPRAP grantees. The availability of SEAPRAP research data and analyses to population program personnel was thus limited, unless it is assumed that this personnel took the initiative to consult university library holdings, or that they had access to copies of reports furnished SEAPRAP grantees.[3]

RESEARCH AREAS

Table 6 summarizes through the use of, hopefully, self-evident labels, the problem areas in which the awardees chose to undertake research. The total number of topics is slightly higher than the number of awards or awardees. This is because each of the several research projects could be classified under more than one category and was so classified. For instance, one study sought to verify the relationship between migration status and fertility behavior of a population of migrants in a given area; this study was classified under both migration and fertility.

On the contents of the table itself no elaborate comments seem necessary. It is clear that the topics that concerned most of the grantees were fertility, migration, and family planning. Perhaps the more pertinent comment should be addressed to the question: To what extent did the research projects make a contribution to the stock of knowledge on population issues in the region? At the height of SEAPRAP activities two important articles (Concepcion 1977, Jones 1978) reviewed trends on population research in the Asian region and identified research areas where more work needed to be done on an empirical basis. A more than cursory glance at these articles and the research reports written by SEAPRAP grantees suggests that making a fair judgement on SEAPRAP's contribution to the substantive literature will constitute a review article in itself and is probably a task better undertaken by someone with no extensive connections to SEAPRAP.

Proceeding, therefore, to the articles presented in this book, the collection is organized around three major themes which also comprise the first three sections of the book: fertility, population mobility, and family planning and techniques. The fourth section is a residual one in thematic terms; but it is substantively important in that it conveys the wider spectrum of research interests of a significant portion of the grantees.

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[3]Each grantee received one copy of every report that was circulated after he/she became a grantee. The author of a particular report was given four extra copies on the understanding that these would be given to individuals and/or institutions that participated in the research project or that would otherwise be interested in the research report. The information on the actual distribution of these copies has not been systematically compiled, but it is known that at least some of these copies found their way to local family planning agencies.

TABLE 6
Problem Areas in Which SEAPRAP Awardees Undertook Research

Topic	Countries					Total
	Indonesia	Malaysia	Philippines	Singapore	Thailand	
Fertility	8	2	15	—	10	35
Migration (Population Mobility)	5	2	5	1	7	20
Family Planning						
a. Family Planning, General	6	—	1	1	7	15
b. Family Planning Programs	2	1	1	—	4	8
c. Knowledge, Attitude, and Practice (KAP) relative to Family Planning	3	1	4	—	—	8
Birth Limitation Techniques	1	2	2	1	4	10
Labor Force Participation	—	1	4	—	3	8
Urbanization	3	—	—	—	3	6
Family Size	3	—	—	—	2	5
Population Education and Communication	2	—	—	—	3	5
Population (General)	—	3	1	—	2	6
Children	2	1	1	—	1	5
Demographic Economic Analyses	—	3	—	—	—	3
Husband-Wife Communication	—	—	2	—	—	2
Not Elsewhere Classified	3	2	—	—	3	8
TOTAL	38	18	36	3	49	144

As indicated previously, these fifteen articles were selected from among the research reports submitted by the grantees, and condensed for reasons of space. In general, no hard and fast rules were followed for including articles in the volume. There were, of course, some basic factors that were considered. One was a limitation; at the time the selection was made only slightly over 70 percent of the research reports had been completed and were on hand. Later reports could not be considered for inclusion. Reports that were published elsewhere were similarly excluded. An attempt was made to see that the topics of greatest concern to the grantees are commensurately reflected in the volume. Some standard of quality, intuitively arrived at, was set for the reports that were to be included. Care was also taken to see that each country of origin of awardees received some representation in the volume. But, all in all, it was not easy to set and follow a defensibly objective set of criteria, nor was such a standard eventually deemed to be desirable. It is thus better to consider the papers presented in the pages that follow as simply one set chosen on the intangible criterion of providing a sense of the kind of work that the SEAPRAP grantees did in the region. Presumably an entirely different set of papers could achieve the same purpose just as well. But sooner or later one has to write finis to the selection process.

AN OVERVIEW OF THE STUDIES

To initiate our brief overview of the fifteen studies included in this volume, it would be important to stress the need for population-related research in the Southeast Asian region, more precisely, within Southeast Asian countries. There stems a conscious effort among policy-makers and social scientists in these countries to ensure an effectively formulated and implementable population policy by way of useful feedback from research undertakings. Issues emanating from rapid population growth are commonly felt and, to some extent, remain unclarified. More understanding of the dynamic processes involved is needed to gain further insights into the relevant factors and features of the population problems confronting such countries. It is also necessary to gain more insights into the effectiveness of the measures taken to curb these problems and the consequences that have resulted from these measures. This is, undoubtedly, a major task. Much work is yet to be done despite the growing amount of research that is being undertaken.

The 15 studies included in this volume should be regarded as a positive response to this need. The individual efforts shown by these young social scientists are commendable in the sense that their research has shed valuable knowledge about some facets of the problem, more specifically in the areas of fertility, population mobility, family planning, the evaluation of family planning programs, and the environmental influence of demographic behavior. With no exception, these concerns have direct policy implications. Although their analytical approaches and skills are that of apprentices in the craft of research, these young scholars have successfully demonstrated the viability of viewing and assessing population issues from a localized context. A sizeable number (10 out of 15) of these studies are regarded as local-area studies (see Table 7). This should be seen as a commendable concern because their descriptive assessments of population dynamics and evaluations of fertility control program efforts on the local level serve as valuable contributions to national policy-making. The lack of flexibility and applicability to the local situation have become major shortcomings of national population policy implementation. Another common orientation shared by these studies is their analytical approach at viewing facets of the population problem, more specifically, in trying to assess a host of correlates and factors related to demographic behavior and consequences emanating from it. These efforts reinforce the current major thrust of population research which emphasizes the assertion that demographic behavior has direct linkages and implications to economic and societal development. In more ways than one, these

researchers have adopted the population and development framework. Included in their assessments is a mix of social, economic, anthropological, and psychological correlates hypothesized as relevant in their particular research concerns (see Table 7).

TABLE 7
Analytical Features of the 15 Studies of SEAPRAP Grantees Included in This Volume

Analytical Feature	No. of Studies	% of Total
Scope of the Study		
Local	10	66.7
National	5	33.3
Data Source		
Primary data	13	86.7
Secondary data	1	6.7
Both	1	6.7
Time Period		
Early 1970s	13	86.7
Late 1970s	2	13.3
Analytical Concerns		
Descriptive	10	66.7
Evaluative	4	26.7
Both	1	6.7
Type of Statistical Analysis		
Cross-tabular/bivariate	10	66.7
Multivariate	5	33.3
Variables Considered		
Social, economic, demographic	2	13.3
Anthropological	1	6.7
Social, demographic	1	6.7
Social, psychological	3	20.0
Social, economic, demographic, and marketing	1	6.7
Social, economic, demographic, and psychological	7	46.7

A number of other general observations can be made about the contributions included in this volume. These are more vividly expressed in Table 7. A large percentage (86.7 percent) of these studies are based on primary data collected through sample surveys conducted in the early 1970s. These studies are predominantly descriptive in nature and have limited their analysis to cross-tabular results. This is reflective, perhaps, of the contributors' relative inexperience in doing research and the lack of adequate computer facilities in their institutions, thereby inhibiting the application of more rigorous analytical techniques. However, one third of the studies can be considered as more evaluative in the sense that these have attempted to assess the explanatory capacity of a host of factors in influencing demographic behavior. Among the multivariate techniques

applied are: regression analysis, factor analysis, discriminant analysis, and additive multiple classification analysis. On the whole, all the studies have shown a genuine interest in revealing results which are worth taking note of and which will be discussed briefly in the subsequent paragraphs.

The four studies included in the section on Fertility are assessments based on national surveys and secondary data. Syahruddin analyzes 12 socio-economic and demographic determinants affecting fertility levels in Indonesia. Two basic equations are tested, the fertility determinant equation and the threshold hypothesis using three alternative models, for the purpose of isolating the most important determinants of fertility. Regression analysis is applied to test the equations. The demographic determinants which are found to be most important include marriage duration and wife's age at first marriage. Both determinants exhibit negative effects on fertility. The study likewise shows that the wife's work status has a negative impact on fertility, a finding which corroborates those of other studies done in other countries.

In Peninsular Malaysia, Fong analyzes the effects of socio-economic determinants on fertility, as measured by crude birth rates and general fertility rates estimated for the 70 administrative districts. Data for the 26 socio-economic variables and the two fertility measures are drawn from published and unpublished statistical sources. Three types of results are analyzed, i.e., for the entire set of districts, and for the rich and the poor districts, as classified according to income. Principal-components analysis is applied on the socio-economic variables to derive underlying meaningful factors which are later used as independent variables in the regression equations. Five factors are identified for the entire set of districts and for the rich districts. These are: (1) status of ecomomic development and literacy; (2) child mortality; (3) status of women; (4) availability of social amenities; and (5) demographic pressure. All of these factors, except the fourth factor (availability of social amenities), are identified in the case of the poor districts. The factors that contribute substantially in explaining fertility levels are demographic pressure and status of women. Both exhibit negative effects on the dependent variable.

The research work done by de Guzman is one of the more recent assessments of social mobility patterns in the Philippines. Occupation is used as the indicator of social position. Intergenerational and intragenerational mobility patterns are depicted from the 1973 National Demographic Survey subsample of males aged 25 to 64. The main findings can be viewed in consonance with the impact of modernization in the country. Evidence shows there is less rigidity in the occupational structure. Upward mobility is observed to be more substantial than downward mobility and short-distance mobility tends to be more predominant. The effect of social mobility of fertility is assessed by testing the additive multiple classification model. It is observed that social mobility has the effect of depressing the fertility of upwardly mobile and downwardly mobile couples.

Also concerned with fertility determinants, Pichit considers 34 socio-demographic and economic factors and analyzes their influence on rural and urban fertility in Thailand. Data from a national sample survey, the Longitudinal Study of Social, Economic, and Demographic Change in Thailand, are utilized for this study. In the descriptive phase of the analysis, the extent and magnitude of association between the socio-demographic and economic variables with fertility (characterized by mean number of live births) is assessed. The significantly associated variables are later used as independent variables in the regression analysis for the rural and urban samples. Aside from the rural versus urban distinction made, marriage duration is used as a control variable in the descriptive and multivariate phases of the analysis. More socio-demographic and economic variables are found to be significantly associated with urban fertility than with rural fertility. Among those included as independent variables in the regression model are: wife's age, number of infant deaths, wife's age at first marriage, wife's education, wife's desired number of children, wife's work experience before marriage, number of years wife lived

in urban area, wife's mass media exposure, wife's knowledge, attitudes, and practice of family planning, husband's type of employment, wife's desire to depend on children in old age, and wife's ethnicity. These independent variables show a higher combined effect on fertility, particularly in the higher years of marriage duration.

Two of the three studies on population mobility are done in a specific urban center of the grantees' respective countries. Zablan studies rural migrants in Cebu City, the second most prominent urban center in the Philippines.

The study concerns itself with evaluating factors from the standpoint of the individual migrants, i.e., perceived factors, as well as factors influencing their decision to migrate to Cebu City, the area of destination. These factors include family influence, presence of relatives in Cebu City, and types of sources of information about living conditions in the area of destination. The study also looks into migration consequences from the individual level in terms of adaptation and from the aggregate level in terms of the housing situation and the effects of migration on the city's population. Both primary and secondary data are used in the analysis, which is mainly descriptive in nature. Rural migration to this particular urban center is characterized basically as intra-regional and, more frequently, intra-provincial. Economic factors and reasons are observed to be the most important and these are reinforced by family approval and the presence of relatives in Cebu City who likewise serve as information sources. The main difficulties encountered by migrants in adapting to city life are poor or substandard living conditions and lack of economic opportunities. Rural migrants are predominantly from the young age groups and this has direct implications on the city's population composition, particularly with respect to age structure and labor force participation.

The second study included in this section analyzes the role of labor migration in the industrial development of Haad-Yai, an urban center located in the southern part of Thailand. Valaiporn examines the employment characteristics of migrants by industry-type and determines the migrant composition of the industrial manpower of that growth center. Both secondary and sample survey data are utilized for the study. Among the questions that are asked of the migrant sample are: reasons for migrating, mode of adaptation in terms of living accommodations, whether or not seeking employment, earning capacity, and job satisfaction. Labor migration to Haad-Yai is mainly intra-regional. Economic reasons (e.g., seeking employment) are often cited as the main reason for migrating. Migrants are generally stable in their present employment but earn a low income. It is also found that certain industrial groups absorb a considerable proportion of migrants who were formerly engaged in farm labor.

Tai examines the effects of relocation in Singapore's recent public housing program. The study puts this problem into perspective by tracing the historical developments that led the government to formulate and include this program among the strategies for efficient population planning. A sample of families living in nine public housing estates were interviewed to gain some insights into their modes of adaptation to their new environment, their degree of satisfaction with their living accommodations which include aspects like transportation facilities, commuting time, physical housing amenities, and neighbors. The families are generally satisfied with their present housing conditions but cite that relocation has incurred financial burdens like higher transport expenses and longer commuting time to work. Interaction with neighbors is rather limited but they perceive that the housing estates are congenial in promoting integration with other ethnic groups.

Family planning programs have aroused the research interest of social scientists in undertaking studies to evaluate these programs' effectiveness in depressing high fertility levels and, more importantly, their acceptability by the target group — the married couples. The four studies included in the third section of the volume are, in one way or another, concerned with this issue. Setiadi's study assesses the significance of selected

socio-psychological variables in influencing the married women's decision to practice family planning. The study is confined to a sub-district in East Jakarta. The analysis compares two groups, namely, the acceptors and non-acceptors, in terms of their knowledge, attitudes, and practice of family planning, influence of specific reference groups, modernity attitudes, ideal family size, sex preference for children, and perception of family expenditures on children's education. Family planning attitudes are found to be generally favorable, even among non-acceptors. As expected, more knowledge of family planning methods is more common among acceptors — this information is acquired mainly from family planning fieldworkers and health personnel. Husbands play an important role in influencing the married women's decision to practice family planning. In another study, Promboon evaluates the impact of the National Family Planning Communication Support Program in a specific Thai province, Nakorn Sawan. Results of two sample surveys on married couples are compared to assess the effects of the program considering varying levels of implementation. The study's main purpose is to measure changes in the level of knowledge, attitudes, and practice of family planning of married couples, and exposure to family planning communication inputs in terms of general contact, interest, and actual reception. Although an increase in KAP and in exposure to communication inputs is noted, these are too minimal to be regarded as impressive and conclusive. Nonetheless, the radio is considered to be an effective means of family planning communication. Interest is shown in obtaining more information about family planning from health personnel and mobile motivation inputs.

The effectiveness of the IUD as a family planning method in reducing fertility among rural women is assessed by Cabaraban in Misamis Oriental, a Philippine province. The study compares fertility estimates for three groups of women, namely, IUD acceptors, "other methods" acceptors, and non-acceptors, during two time periods. It notes a decline in the fertility and number of pregnancies among IUD and other acceptors. A comparative assessment of the three groups is made with respect to such characteristics as age, marriage duration, number of children ever born at acceptance date and at interview date, and education. Additional characteristics of IUD users are likewise evaluated and these include: reasons for and decision of choice, usual complaints, and reasons for continuance and discontinuance. Among the main findings uncovered by the study with respect to the two types of users are: (a) these married women are in their early thirties; (b) they have been married longer and have a higher parity level; (c) they have attained advanced primary education; and (d) they have used the method for family limitation rather than for birth spacing. Some of the characteristics shared by IUD users are: (a) the decision to use the method is made jointly with the husband; (b) convenience is the main reason for acceptance; (c) minimal complaints have been registered about this method; and (d) discontinuance is due to expulsion and removal.

Another way of evaluating the efficacy of the family planning program, more specifically in the sale and distribution of contraceptives, is to gain some knowledge about the non-program users and why this group does not avail itself of the opportunities and benefits provided by official channels. Sieh tests the viability of the source of contraceptive supplies as a useful basis for market segmentation of contraceptive methods in Malaysia. The study addresses itself to the need for understanding the target segment, i.e., the end-users or, in this case, the contraceptive users. Four target segments are identified, namely, the ever-user program segment, the ever-user non-program segment, the ever-user both program and non-program segment, and the non-user segment. A comparison of these target segments is made with respect to three sets of independent variables, namely, socio-economic characteristics, KAP of family planning, and marketing of contraceptives. On the whole, a total of 22 profile (independent) variables is used in the analysis. Discriminant analysis, a multivariate procedure, is applied to

enable differentiating among groups. The market segmentation evaluation proves to be successful and the three profile categories are assessed to be efficient in varying degrees. The socio-economic and KAP variables are more powerful discriminators. Twenty-five profile characteristics of non-program users are determined by the study.

The four studies included under the fourth section of this volume deal with socio-cultural issues related to demographic behavior. This is a rich and promising research concern in population, particularly because much is yet to be understood with respect to cultural patterns, norms, and values underlying population dynamics and more specifically, family formation and fertility limitation. Luechai examines the roles of husbands and fathers in family planning, particularly their knowledge, attitudes, and practice (wife's use of contraceptives) and their role in decision-making with respect to children's education, marriage, occupation, and household expenditures and purchases. The study was done in rural Chiang Mai, a northern Thai province. Knowledge and approval of family planning among husbands is predominantly high. However, husbands feel that family planning practice is more a responsibility of their wives. Decision-making on family matters, as revealed, is a joint prerogative, but husbands claim that they have more say on children's marriages and occupations.

How acceptable is family planning in a matrilineal society? Naswida's study seeks to provide some answers to this question by focusing on the Minangkabau, an ethnic group in West Sumatra. The study is conducted mainly to explore socio-cultural features of a matrilineal society which either encourage or inhibit family planning efforts. Some of these features include choice of marriage partner, type of marriage, system of marriage (matrilocal or neolocal), the role of the *sumando* (husband) and *mamak* (oldest male child of the wife's side) in making family decisions, function of children, and responsibility in caring for children. The usual KAP variables are utilized as dependent variables of the study. A sample of families were interviewed to derive all this information. High approval of family planning is noted but only a few claim they are practicing family planning. Those who are more adverse to family planning are more adherent to traditional norms and customs.

Marbella's assessment of Filipino women entrepreneurs and their fertility behavior gives supporting evidence to women's active role and participation in economic opportunities and how this effectuates fertility reduction, as seen in terms of number of pregnancies and average years of child-spacing. The study examines the role of women pursuing a career in business, particularly their need to be freed from child rearing and close home management supervision. It also looks into the time and effort demanded by the women's work (extent of busyness) and how these have direct bearing on their fertility behavior. These relationships are viewed from two vantage points, namely, when these women initiated their entrepreneurial activities and during the height of their entrepreneurial career. Other relevant points considered by the study are practice of family planning, family planning methods used, economic security value of children, and egalitarianism in decision-making in the home and in the firm. The correlation between the entrepreneurial activities variables and fertility behavior is assessed to be negative, and is particularly significant during the height of entrepreneurship. The extent of family planning practice increases at the height of the women's careers yet the method most commonly used is rhythm. Children are not seen as future sources of economic security. Surprisingly, education and income are not related to fertility behavior.

An anthropological analysis of how population is influenced by ecological adaptation, more specifically, resource exploitation strategies, is done by Gomes. Two aboriginal groups are compared, the Negritos of Rual Post engaged in hunting and gathering, and the Temuans in Kg. Paya Lebar, a basically agricultural group. Both groups are found in West Malaysia. An examination of their ecosystems which include such features as the forest, *ladang* (cultivated environment), the rivers, and the Malay *kampung,* as well as

other salient cultural elements like their biophysical characteristics, language, social organization, and religion are seen in conjunction with their demographic characteristics and the vital events of fertility, mortality, and migration. Demographic information was collected through structured and in-depth interviews. Cultural and ethnographic data were gathered through participant observation. Fertility and mortality patterns differ for the two aboriginal groups. Higher fertility is exhibited among the Temuans which is attributed mainly to their sedentary lifestyle. High mortality is likewise evidenced among this group and is partly due to environmental influences and high-density living conditions which propagate disease more easily. Migration is a common feature for the two groups since the Negritos lead a nomadic existence and the Temuans have been forcibly driven from their area of residence by Malay settlers.

The studies in this volume should be regarded as promising beginnings. The readers may note that although interesting findings have been revealed, many facets of the research problems still need to be clarified and amplified. This could somehow be achieved by improvements in the analysis and by increased maturity and expertise in the craft of research. These young scholars have shown that this goal may one day be attainable.

We have not overlooked some minor problems in the preparation and editing of the present volume. A number of bibliographical references are incomplete in three of the articles. The authors were duly alerted but, unfortunately, their non-response to our request has forced us to retain these citations in their original form.

SECTION I

Fertility

FERTILITY DETERMINANTS IN SUMATRA

Syahruddin

Sumatra is one of the five largest islands in Indonesia with an area of 473,606 square kilometers. In 1980 its total population was 28,016,160. Among several main islands, Sumatra had the highest total fertility rate (7.1) in 1974.[1] A family planning program was introduced in the same year, but at present it is not yet well accepted. The desired number of children is still high, even if most eligible couples know and understand the relevance of family planning in their lives. Family planning campaigns have not been able to change the fertility behavior of the population, particularly those living in rural areas. The aim of this research project, therefore, is to identify the determinants of fertility decision of a family or a couple. What makes a couple want to have a large or a small family? What factors influence the decision on the number of children? Does one's income level or place of residence, i.e., urban versus rural, affect this decision, or is there any existing threshold level in the analysis of fertility? The microeconomic model using a single equation system is applied in this study to identify determinants of fertility.

ANALYSIS OF FERTILITY BEHAVIOR

In his study of fertility behavior Mincer (1963) stated that the demand for children is consistent with demand theory, in which the typical income effect is positive. He stated that the negative relation between fertility and income, interpreted as reflecting demand theory, makes the number of children an "inferior good."

The problem with using cross-section data is that the prices are fixed (Mincer 1963).[2] In his study Mincer used the opportunity cost of child care instead of prices. The cost, according to him, can be measured in terms of the foregone wage which the mother could have obtained in the labor market. Thus, Mincer (1963: 76) simplified the demand for children as:

$$X_o = b_1X_1 + b_2X_2 + b_3X_3 + u \qquad (1)$$

where X_o is the fertility variable, X_1 is the husband's income, X_2 is the wife's full-time earnings, and X_3 is a variable representing the level of contraceptive knowledge. Based on the evidence as shown by the other studies that $X_f = X_1 + X_2$, where X_f is the potential family income, equation (1) above can be rewritten as:

$$X_o = b_1X_f + aX_2 + b_3X_3 + u \qquad (2)$$

and $a = b_2 - b_1$. According to economic theory, the value of b_1 (income effect) is positive and a (substitution effect) is less than zero. However, it is questionable whether b_2, the price effect not compensated for by an equivalent change in income, is positive or

[1]According to the Institute for Demography, in 1974 the total fertility rate for Indonesia as a whole was 6.0. For Java-Madura, it was 5.6; Kalimantan, 6.6; Sulawesi, 6.3; and other islands, 6.5.

[2]Data on the cost of children ideally requires an index of prices of the various categories of expenditure, including the expenditure on children.

negative. It depends on whether the income effect dominates the substitution effect, or vice versa. If the income effect dominates the substitution effect, the price effect will be positive.

In his empirical work, Mincer (1963) found that income effect is positive and price effect (b_2) is negative. The effect of husband's schooling is negative, and it is not significant. This finding is consistent with his theoretical explanation as expressed in equations (1) and (2) above. The definition of income (wife and husband's) or individual income is the main problem in Mincer's model. It is clear that the effect of these incomes on fertility are different.

On the other hand, De Tray (1973) concluded that production of child services is dominated by women. The role of men seems to be primarily suppliers of market goods and services. According to him, female earnings are the single most important factor in the completed-family size. The effect is negative and highly significant. Male schooling and earnings are found to be a positive influence on fertility. Statistically, male earnings are significant but not male schooling. Furthermore, De Tray found that the effect of wealth (proxied by median value of housing) and infant mortality rate have a positive effect on desired number of children. His study also revealed that the number of children in urban families is lower than that of families in rural areas.

The negative effect of wife's education on fertility is supported by Ben-Porath's study, "Economic Analysis of Fertility in Israel" (1973). The study concluded that the "net" relation between fertility (number of children ever born) and education of the wife is negative. However, Ben-Porath suggested that a different relationship is shown when comparing low- and high-wage mothers. This relationship is a transpose J-shape, where the sharpest decline in fertility is between women with no schooling and those with some schooling, with a slight inflection at the top.

The effect of male education on fertility does not have any clear direction. Moreover, a different pattern is seen for different groups of families. In the oriental group a vague (low t-values) U-shaped pattern is seen. Among Europeans a somewhat lower fertility is exhibited in cases where the husband has little education. Husbands' earnings are reported to have a negative coefficient, but it is not distinguishable from zero.

Using a microeconomic model of fertility behavior, Willis (1973) found that the relationship between fertility and measures of husband's income and wife's education has a U-shaped pattern. This finding explains fertility behavior as determined by husband's income and wife's education (potential earnings of the wife). It is in line with Ben-Porath's (1973) conclusions.

Looking at the above findings, it may be concluded that among high- and low-income groups the husband's income (or husband's education) and the wife's education (or her wage rate) have different effects on fertility. Using cross-section data from 94 developed and developing countries, Mauldin and Berelson (1978) concluded that family planning program efforts determine the decline of fertility. Socio-economic factors have a significant relationship with fertility decline: the richer countries do better than the less well-off ones. Furthermore, their findings also indicate that program effort is more important than socio-economic factors. Finally, Mauldin and Berelson (1978: 105) state that a combination of socio-economic factors and program effort may have a stronger effect on fertility decline.

Encarnacion (1974 and 1979) hypothesized that the wife's education (proxy variable for her earning power) and family income have different effects on fertility (number of children ever born) among low- and high-income groups. His findings showed that the effect of the wife's education on fertility was negative beyond the threshold level,[3] and

[3]In his introduction, Encarnacion (1974) elaborates on the threshold hypothesis in the following manner, "The hypothesis that we want to consider is that, indeed, there is a threshold level of family income such that below this level, the effect of

positive below it. However, the positive effect was not statistically significant. The same was true of family income. Its effect on fertility was positive below the threshold level of income and negative beyond this level. The latter effect was not distinguishable from zero, however. Taking the value of the wife's education as a dummy variable, Encarnacion (1979) found that the effect of education on fertility had an inverted U-shaped pattern, where the inflection point was at about six years of schooling. This finding is not consistent with Ben-Porath's (1973) results.

From the discussion above, it may be seen that several factors contribute to fertility change. These may be divided into three categories, namely, socio-economic and demographic factors, biological factors, and family planning program efforts.

SPECIFICATION OF REGRESSION EQUATIONS USED IN THE STUDY

Two basic equations are examined in this study — the equation for fertility determinants and the equation for threshold hypothesis. Fertility determinants are examined through a single equation model and the recursive method. The latter is applied because fertility may be affected first by biological factors and then by socio-economic conditions. Number of children born alive is used as a proxy variable for fertility level. Education is used as a proxy variable for earning power because there is a strong significant positive correlation between education and income.

Three methods are used to determine whether or not the threshold hypothesis exists in the sample areas of the study. The first method for calculating the threshold value of the wife's and husband's education consists of taking a non-linear relation of fertility and duration of marriage. By taking the first derivative of fertility with respect to education (husband's and wife's) the value of the threshold level is determined. The second method for calculating the value of the threshold level uses education as a dummy variable. The threshold level is examined using the curve of education with respect to fertility. Finally, the third method for calculating the threshold level value involves dividing the sample into two groups on the basis of education, i.e., EH^+ for higher education and EH^- for lower education.

By comparing the results of the three methods, the existence of the threshold level hypothesis in the sample areas of the study can be determined. Comparison of the results of these three methods is based on the following statistical tests: t-value, $\bar{R}^2$, and F-tests. The relations of the signs of the coefficients of regression are also considered.

THE DATA

Among several sources of data on fertility, the 1973 Fertility-Mortality Survey in Indonesia conducted by the Demographic Institute in Jakarta was considered the best source for this study. The Sumatran sample for this survey consisted of 8,688 ever married women aged 15 to 49 years. Of these, 2,525 were in urban areas, and 6,163 were in rural areas. From this sample a subsample of completed families, i.e., father, mother, children, and other household members at home, was drawn for the purpose of the present study. Wives aged 40 to 49 were considered to belong to a completed family. Also, within the subsample, the age of the husbands at first marriage was limited to 20 to 60 years. This limitation was imposed on the study by the presence of unreliable data on this variable.

Thus, there was a total of 2,357 completed families in the subsample: 1,551 in rural areas and 8,061 in urban areas. Unfortunately, the data on infant mortality could not be obtained, so the effect of infant mortality on fertility could not be investigated.

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more income is to increase fertility. Above this level, we follow the general view that the marginal effect of income on fertility is negative. Because of the correlation between income and education, and also for intrinsic reasons, we can state a subsidiary hypothesis in regard to educational level" (p.115).

THE VARIABLES INVESTIGATED BY THE STUDY

The following is a listing of the variables which this study considered. (The code used for each variable is also shown.)

Variables	*Code*
Wife's age at survey time	(AW)
Wife's age at first marriage	(AM)
Wife's educational level	(EW)
Wife's occupational status, i.e., working or not working	(ESW)
Wife's practice of family planning	(FP)
Wife's religious affiliation, i.e., Moslem or non-Moslem	(RW)
Duration of breast-feeding	(CBF)
Husband's age at survey time	(AH)
Husband's educational level	(EH)
Husband's occupational status, i.e., working or not working	(OCH)
Attitude towards family planning	(AFP)
Knowledge of family planning	(KFP)
Duration of marriage, in years	(DM)
Frequency of marriage	(FM)
Residence, i.e., urban or rural	(LOC)
Number of children ever born	(NB)
Ideal number of children	(ND)

Due to the recording system used in the 1973 Fertility-Mortality Survey, there were problems in obtaining some data needed for the present study. For instance, the ages of wives and husbands were not recorded properly. The data for wives included year of birth and year when first married; while for the husband, it was age at first marriage. It was this information that was used to extrapolate the variables AM, AW, DM, and AH. To obtain AM (wife's age at first marriage) the year of the wife's first marriage was subtracted from 1973 (the survey year). AW was calculated by deducting the wife's year of birth from 1973. DM (duration of marriage) consisted of the difference between AW and AM, i.e., AW − AM. Finally, the husband's age at first marriage was added to DM to arrive at AH (husband's age at survey time).

Though DM and AH may have been overestimated in some cases, i.e., families where the husband or wife married more than once, this did not create serious problems. This situation occurred rarely, in roughly six out of a hundred cases.

The means and standard deviations of the variables are presented in Table 1 which shows that the age at first marriage is 33.7 years for the wife and 35.8 years for the husband. According to Iskandar (1970) this finding reflects the situation in Java and other developing countries. However, other studies report different findings. For instance, Muslim Abdurrahman (1976) stated that age at first marriage among females in Aceh (northern part of Sumatra) was about 18 years old. It may be said that age at first marriage, whether for males or females, is overestimated, in Table 1. However, this data may still be used in this study since the differential magnitude of the figures is more important than their actual level.

The average value of the variable NB, 3.7705, is adequate. This figure shows that that the average family size is around six. The husband's educational level (1.9648) is higher than that of the wife's (1.4366). This is consistent with the findings of the 1973 Fertility-Mortality Survey in Indonesia. Finally, most of the respondents (85 percent) are Moslems.

TABLE 1
Means and Standard Deviations of Variables Investigated

Variable	Mean Value	Standard Deviation
AM	33.6975	6.3838
EW	1.4366	1.1913
ESW	0.3958	0.4891
FP	0.0899	0.2862
RW	0.8511	0.3561
CBF	2.8184	1.0618
AH	46.4484	5.8730
EH	1.9648	1.3753
OCH	0.9813	0.1354
AFP	0.6330	0.4821
KFP	0.3466	0.4760
DM	10.6440	4.2097
FM	1.0611	0.3050
LOC	0.3420	0.4745
NB	3.7705	2.0092
ND	5.1459	1.3758

The simple correlation coefficients among these variables are shown in Table 2. The coefficients are as expected.

FERTILITY DETERMINANTS

The multiple regression results for NB and ND are shown in Table 3. As expected EH has a positive regression coefficient. This is consistent with Mincer's hypothesis that income effect is positive. The effect of the wife's education on NB is positive, but it is not significant at the five percent level of significance. DM (duration of marriage) and AM (wife's age at first marriage) have positive and negative regression coefficients respectively. Thus, it may be said that a woman who marries at a younger age tends to have more children than one who marries at a later age, when all other variables are held constant. On the other hand, marriages of longer duration tend to produce more children than marriages of shorter duration.

Theoretically, the longer the period of breast-feeding, the shorter the period of fecundity, and consequently the tendency to reduce the number of children born. The positive effect of CBF on NB (highly significant) might be due to some socio-economic factors like income and education.

As expected, the regression coefficient of the wife's occupational status (ESW) on NB is negative and is not significant at the five percent level. FM (frequency of marriage) reduces fertility level because there is a negative association between FM and DM (duration of marriage). An increase in FM means a shorter DM.

The regression coefficient of LOC (residence) is positive and significant at the five percent level. This finding is not consistent with the total fertility rate in urban and rural areas, i.e., rates in rural areas are higher than in urban areas (see Table 4). However, this finding might be consistent with the age specific fertility rates for mothers aged 40 to 44 from 1953 to 1968 (see Table 4).

Family planning program efforts have a positive effect on NB, but on the basis of its t-values, only AFP (attitude towards family planning) is highly significant. The positive regression coefficient of program efforts was not expected since it was hypothesized that

TABLE 2
Correlation Matrix

	NB	EH	EW	AH	DM	AM	KFP	AFP	FP	CBF	OCH	RW	ESW	LOC	FM	ND
NB	1.0000															
EH	−0.1312	1.0000														
EW	−0.1954	0.7081	1.0000													
AH	0.3213	−0.2200	−0.2401	1.0000												
DM	0.6403	−0.3423	−0.3928	0.5506	1.0000											
AM	−0.6152	0.2424	0.2756	−0.5719	−0.9377	1.0000										
KFP	−0.0339	0.4524	0.4591	−0.0627	−0.1672	0.0803	1.0000									
AFP	0.0488	0.2052	0.2163	−0.0158	−0.0579	0.0407	0.2975	1.0000								
FP	0.0138	0.3219	0.3305	−0.0337	−0.0799	0.0272	0.4285	0.1994	1.0000							
CBF	0.3863	−0.2921	−0.3108	0.1681	0.3880	−0.3107	−0.1929	−0.0589	−0.0957	1.0000						
OCH	0.0233	−0.0149	−0.0152	−0.0564	0.0040	0.0033	0.0148	−0.0010	0.0324	0.0325	1.0000					
RW	0.0596	−0.1875	−0.1589	0.0914	0.1940	−0.1194	−0.1736	−0.0762	−0.0976	0.0632	−0.0137	1.0000				
ESW	0.0005	−0.1414	−0.0629	0.0262	0.0491	−0.0412	−0.0737	0.0061	−0.0483	−0.0984	0.0091	−0.0562	1.0000			
LOC	−0.0681	0.4250	0.3831	−0.0927	−0.2030	0.1204	0.3037	0.0961	−0.2642	−0.2685	−0.0658	−0.0904	−0.2891	1.0000		
FM	−0.0491	−0.0758	−0.0489	0.1664	0.0398	−0.0221	−0.0436	0.0169	−0.0241	−0.0142	−0.0135	0.0565	0.0341	−0.0770	1.0000	
ND	0.3499	−0.1079	−0.1264	0.0803	0.2177	−0.2054	−0.0747	−0.1701	−0.0840	0.1835	0.0465	−0.0241	−0.0649	−0.1799	−0.0991	1.0000

TABLE 3
NB and ND Equations for All Samples

Variable	NB		ND	
	Coefficient	t-value	Coefficient	t-value
Constant	1.411845	—	5.854652	—
EH	0.1087024	3.860	0.0364947	1.251
EW	−0.0225085	−0.575	0.0061945	0.178
DM	0.2534847	10.553	0.0410175	1.944
AM	−0.0330178	−2.184	−0.0162598	−1.224
CBF	0.3695342	11.405	0.1117690	3.927
RW	−0.2121930	−2.361	−0.2597011	−3.290
AFP	0.2798745	4.191	−0.4505552	−7.679
KFP	0.0836223	1.049	0.1055162	1.507
FP	0.1176123	0.972	−0.1711892	−1.611
AH	−0.0102548	−1.580	−0.0062954	−1.104
OCH	0.2306035	1.020	0.3221319	1.622
ESW	−0.0993718	−1.515	0.0430110	7.466
FM	−0.3494683	−3.423	−0.4530310	−5.051
LOC	0.1900251	2.505	−0.3943319	−5.888
$\bar{R}^2$	0.46055	—	0.11222	—
F	144.66937	—	22.2714	—

TABLE 4
Age Specific Fertility Rates

Area & Period	Total Fertility Rate	Ages	
		40-44	45-49
Urban			
1953-63	7.19	142	*
1964-68	6.91	131	*
1969-70	6.65	79	58
1971-72	5.81	70	16
Rural			
1953-63	7.48	84	*
1964-68	7.54	116	66
1969-70	7.62	104	51
1971-72	6.15	82	24

*Too few cases reported.

SOURCES: LDFEUI, *Laporan Sementara Survey Fertility-Murtalitas Indonesia*, 1973, 1975, p. 14, Table II.4.

program efforts would reduce NB. Family planning programs were carried out by private organizations. These programs were more concentrated in urban rather than in rural areas. Thus, families who were economically better off were the ones who tended to join these programs. Consequently, there is a positive association between education

(husband's and wife's educational level) and program effort (Foreit, Koh, and Suh 1980: 89). The simple correlation of EH and EW on AFP, KFP, and FP shown in Table 2 supports this.

The F-values in Table 3 indicate that the linear regression results are significant. All of the independent variables considered in the model can be regarded as the determinants of NB and ND, yet showing varying effects on the dependent variables. For instance, the wife's educational level has a negative effect on NB, but a positive one on ND. However, both effects are not significant at the five percent level. Family planning practice (FP) consistently affects ND, but the relationship between these two variables is not clear. In some cases, the attitude towards family planning reduces the ideal number of children. The finding is consistent with the explanation about the positive effect of AFP on NB.

The ideal number of children is higher in rural than in urban areas, although the number of children ever born is higher in urban areas than in rural areas. According to their t-values, both regression coefficients are significant at the five percent level. The data also show that the mean value of ND is higher than the mean value of NB. This means that there are some families which cannot have their ideal number of children because of biological restrictions. Most of these cases consist of working wives in the rural areas. The regression coefficient of ESW (wife's occupational status) on ND indicates this. The rural working wife tends to have a low rate of fertility but a high ideal number of children. No multicollinearity problems were detected. The main independent variables according to the F-test were: DM, CBF, EH, AFP, FM, LOC, and AM (see Table 5). All the explanatory variables increased the value of $\bar{R}^2$, the variation in the dependent variable explained by the independent variables.

TABLE 5
Test for Additional Explanatory Variable Where NB Is Dependent Variable

Independent Variable	The Value of F $(v_1 : v_2)$*	Degree of Freedom	F (0.05)
DM	1636.39	1 : 2355	3.84
CBF	92.87	1 : 2354	3.84
EH	64.76	1 : 2353	3.84
AFP	20.74	1 : 2352	3.84
FM	17.33	1 : 2351	3.84
LOC	11.61	1 : 2350	3.84
RW	7.61	1 : 2349	3.84
AM	4.20	1 : 2348	3.84
AH	2.48	1 : 2347	3.84
ESW	2.39	1 : 2346	3.84
KFP	1.81	1 : 2345	3.84
OCH	1.13	1 : 2344	3.84
FP	0.86	1 : 2343	3.84
EW	0.28	1 : 2342	3.84

* This value is calculated by using the following formula:

$$F(v_1 : v_2) = \frac{(\hat{\hat{y}}^2 - \hat{y}^2) / (K - M)}{e^2 / (N - K)}$$

where $\hat{\hat{y}}^2$ and Σe^2 are explained and unexplained sums of squares after the addition of a new independent variable. $\hat{y}^2$ is the previous explained sum of squares. K and M are the number of variables in the new and old equations respectively, and N is number of observations. For a detailed explanation, see Koutsoyiannis (1973), p. 156.

The following analysis looks into the question: Is the recursive method better than the single equation model? The regression equation based on the recursive method is shown in Table 6.

Three selections were made to determine the fertility determinants in this model. Selections 1 and 2 considered AM as a function of socio-economic factors and NB as being affected only by demographic factors, FP program efforts, and biological conditions. Biological conditions and family planning program efforts were represented by CBF and AFP respectively. Demographic factors were represented by DM and $\hat{A}M$. They were explanatory variables for NB. Their regression coefficients were highly significant. By excluding DM in the equation, the value of $\bar{R}^2$ declined, but the F-value and regression coefficient of $\hat{A}M$ increased (see Table 6, Selection 2). Selection 3 was also based on the recursive model, but in this case NB was a function of socio-economic and demographic factors, family planning program efforts, and biological conditions. Socio-economic factors, mainly EH (husband's educational level) and EW (wife's educational level) were highly significant. The effect of the husband's education on the number of children was positive, as was expected in demand theory. The wife's education resulted in a negative sign, again as expected in the model. The regression coefficient for EW was slightly higher in significance using the recursive method, but it was not significant at the five percent level using OLS. Both ESW (wife's occupational status) and EW had the same sign and degree of significance. Family planning program efforts had the same results for both methods. The regression coefficient was positive and highly significant.

TABLE 6
NB Equation Using the Recursive Method

Variable	Selection 1	Selection 2	Selection 3
Intercept	14.06261	9.167510	13.28244
EH	—	—	0.1089671
			(3.212)
EW	—	—	−0.1158294
			(−2.108)
ESW	—	—	−0.1305063
			(−1.934)
RW	—	—	*
LOC	—	—	0.0723912
			(0.780)
CBF	0.3578433	0.3392664	0.3706525
	(11.214)	(10.933)	(11.497)
DM	−0.1463700	—	−0.1249763
	(−2.455)		−0.905)
AFP	0.2894383	0.3225456	0.2883253
	(4.446)	(5.060)	(4.424)
$\hat{A}M$**	−0.2945603	−0.2945603	−0.2798335
	(−7.170)	(−35.706)	(−3.030)
$\bar{R}^2$	0.45281	0.45141	0.45793
F	486.57536	645.37983	247.94297

Note: t-values are given within parentheses.
*Tolerance level is zero.
**$\hat{A}M = 49.88374 - 0.06339701\ EH - 0.4314618\ EW - 0.1121421\ ESW + 0.9598955\ RW - 0.5663949\ LOC - 1.505136\ DM$

Based on the above discussion and the F-values, it may be concluded that the recursive method does not give better results when compared to OLS. This finding supports Encarnacion's assumption (1974) that the recursiveness of the system does not affect the model.

EXAMINATION OF THE THRESHOLD HYPOTHESIS

The regression coefficient of the NB equation is shown below:

$$\begin{aligned} NB = {} & 0.9980916 - 0.0343339\ AM + 0.4281520\ DM - 0.0074635\ DM^2 \\ & \quad (-2.284) \qquad\quad (11.436) \qquad\quad (-4.976) \\ & + 0.1227241\ EH + 0.0037094\ EH^2 + 0.1664206\ EW - 0.0435526\ EW^2 \\ & \quad (1.537) \qquad\quad (0.242) \qquad\quad (1.991) \qquad\quad (-2.295) \end{aligned}$$

$$\bar{R}^2 = 0.32729$$
$$F = 250.35967$$

Following the procedure explained earlier (see Analysis of Fertility Behavior) the value of threshold level of the wife's education is as follows:

$$\frac{\delta\ NB}{\delta\ EW} = 0.1664206 - 0.0871052\ EW = 0$$

So that:

$$EW = \frac{0.1664206}{0.0871052} = 1.91$$

The figure above indicates that the value of EW's threshold level is about 2. Using the same method, the resulting threshold value for the husband's education was negative. Since this situation is not possible in the real life, i.e., no negative value for husband's education, the estimation of equation using education as a dummy variable was made. The selection clearly shows that AM and DM are the explanatory variables of NB, because the value of $\bar{R}^2$ is higher for Selection 2 than for Selection 1. Unfortunately, the regression coefficient of EW_3 cannot be calculated because its F-value is very small (see Table 7).

Whether in Selection 1 or 2, the regression coefficients of EH_k are all positive. Husband's educational level positively influences the number of children. In other words, the higher the husband's education, the greater the number of children. But, the husband who is a university graduate has fewer children than the husband who has completed academy though the relation in this case is vague, i.e., its t-value is low. In some cases, an increase in the wife's educational level brings about a decrease in the number of children. The wife who is a university graduate has fewer children than the wife who has completed academy. This is an indication of an existing threshold level of education at higher levels. The next step taken in the study was to divide the sample on the basis of the threshold value. The problem was how to determine the value itself, since both the models above yielded different results. Syahruddin (1980) used the threshold value of 2 in his study on the labor force participation of married women in Indonesia. This value is consistent with the findings based on the first model for the wife's education. Therefore, the next analysis used the threshold value of 2 to 5.

The regression equation and its selections based on the threshold value $EH \leq 4$ are shown in Table 8. Selections 1 and 4 may be considered the best among all the selections in Table 8. Selection 1 in particular has to be considered meaningful because of the

TABLE 7
NB Equation for All Samples Based on Fertility Determinants

Variable	Selection 1		Selection 2	
	Coefficient	t-value	Coefficient	t-value
Coefficient	10.19938	—	1.284406	—
AM	10.1920527	−36.236	−0.0224020	−1.499
DM	—	—	0.2866512	12.188
EH_2	0.0846263	0.990	0.1852511	2.245
EH_3	0.2581880	2.322	0.3567335	3.503
EH_4	0.3795332	2.674	0.5205321	4.137
EH_5	0.4894630	2.459	0.6724010	3.645
EH_6	0.4472138	1.360	0.5716216	1.819
EW_2	0.0157183	0.169	0.0982057	1.165
EW_3	−0.3116200	−2.288	*	—
EW_4	−0.5771899	−3.352	−0.1036994	−0.655
EW_5	−1.3162570	−4.304	0.8141617	−2.803
EW_6	−0.6358124	−0.864	0.3359180	0.469
$\bar{R}^2$	0.38678	—	0.41931	—
F	134.45952	—	155.66002	—

* F-value is very small (0.001).

factors affecting fertility mentioned in Table 4. In this selection, the regression coefficients of EH and EW are positive. The former is highly significant, but the latter is not significant at the five percent level. The other explanatory variables of NB, namely, demographic factors, family planning program efforts, and biological conditions, produce the same result whether or not the threshold value is introduced in the model. Unfortunately, the regression equation using the value of EH $\leq$ 5 (beyond the threshold level) could not be calculated because the number of observations was too small.

The effect of introducing the threshold value of 2, where EH^- is the subsample of EH $\leq$ 2 and EH^+ is the subsample of EH $\leq$ 3, is examined next. The regression equation can be seen in Table 9.

Table 9 shows that the regression coefficient of EH is positive whether it is below or beyond the threshold value. The regression coefficient is significant at the five percent level for high-income groups (EH^+) but it is not significant below the threshold level. EW's regression coefficient is positive below the threshold level and negative beyond it. At the five percent level, the latter is significant but not the former. These regression coefficients and their levels of significance are as they were expected in the demand theory. This is an indication of the existing threshold level in the model. In other words, lower-income families differ from higher-income ones in terms of fertility behavior. Furthermore, among high-income groups, an increase in the wife's educational level tends to decrease the desired number of children. This means that the substitution effect is stronger.

Demographic factors have different effects on NB. Firstly, the longer the duration of marriage, the more children there are in the family. The relation is highly significant. Secondly, AM (wife's age at first marriage) and AH (husband's age at survey time) have a negative effect on NB, but their regression coefficients are not significant at the five percent level. On the other hand, the regression coefficient of AM for all samples is significant at the five percent level. Thirdly, the frequency of marriage (which may not

TABLE 8
NB Equation Based on the Subsample EH Less than or Equal to 4*

Variable	Selection 1	Selection 2	Selection 3	Selection 4
Constant	1.415727	8.512401	8.474800	1.421547
EH	0.1092902	0.1021195	0.1065809	0.1122841
	(2.928)	(2.680)	(2.847)	(3.455)
EW	0.0041978	−0.0708197	−0.0639651	—
	(0.101)	(−1.702)	(−1.570)	
DM	0.2441239	—	—	0.2437444
	(9.816)			(9.977)
AM	−0.0360675	−0.1772218	−0.1774244	−0.0363238
	(−2.297)	(−27.562)	(−27.723)	(−2.337)
CBF	0.3846399	0.4489855	0.4490248	0.3849566
	(11.448)	(13.372)	(13.372)	(11.484)
RW	−0.2036762	−0.0209750	—	0.2034767
	(−2.151)	(−0.221)		(2.151)
AFP	0.2837657	0.3206939	0.3327037	0.2869566
	(4.152)	(4.601)	(4.903)	(4.219)
KFP	0.0767690	0.0235266	—	0.0938269
	(0.932)	(0.280)		(1.213)
FP	0.0829419	0.1085261	—	—
	(0.610)	(0.782)		
AH	−0.0082335	−0.0077584	−0.0076553	−0.0083287
	(−1.238)	(−1.143)	(−1.129)	(−1.256)
OCH	0.2816178	0.3031938	0.3140820	0.2862387
	(1.193)	(1.258)	(1.305)	(1.214)
ESW	−0.0939358	−0.1042777	−0.1019070	−0.0926120
	(−1.386)	(−1.507)	(−1.480)	(−1.370)
FM	−0.3533010	−0.3257448	−0.3273417	−0.3523201
	(−3.428)	(−3.096)	(−3.117)	(−3.421)
LOC	0.1887065	0.1190734	0.1302917	0.1946172
	(2.397)	(1.487)	(1.646)	(2.496)
$\bar{R}^2$	0.44903	0.42530	0.42582	0.44943
F	130.63990	127.7743	166.16056	152.49098

Note: t-values are given within parentheses.
*Number of observations is 2228.

be considered as a pure demographic variable) has a negative regression coefficient which is highly significant for all samples as well as the subsample of EH^-. This means that an increase in the frequency of marriage brings about a decrease in the number of children.

The variable, family planning program efforts, has an inconsistent effect on the three samples in Table 9. The regression coefficients of AFP are positive and significant at the five percent level for all the samples. Family planning practice has a negative effect on fertility for the subsample EH^- and a positive effect on the subsample EH^+. These regression coefficients are highly significant. The negative effect of FP on NB below the threshold level was expected, but not the positive effect of FP on NB beyond the threshold level. As previously mentioned the reason for the positive effect of FP on NB is that the family planning program was carried out by a private organization and was concentrated in the urban areas. Therefore, there is a positive correlation between family planning practice and education. In other words, it was the richer families that tended to participate in the family planning program. Breast-feeding, used as a proxy variable for

TABLE 9
NB Equation for Different Samples

Variable	All Samples	EH^{+*}	EH^{-*}
Constant	1.411845	2.306361	1.148066
EH	0.108702	0.1335451	0.0775784
	(3.860)	(1.955)	(1.263)
EW	−0.0225085	−0.1061597	0.0524068
	(−0.575)	(−1.984)	(0.963)
DM	0.2534847	0.2678538	0.2419244
	(10.553)	(7.073)	(7.935)
AM	−0.0330178	−0.0356703	−0.0348304
	(−2.184)	(−1.562)	(−1.791)
CBF	0.3695342	0.3580232	0.3685435
	(11.405)	(6.777)	(9.152)
RW	−0.2121930	−0.2335940	−0.1041015
	(−2.361)	(−2.017)	(−0.791)
AFP	0.2798745	0.2397698	0.3019522
	(4.191)	(1.961)	(3.797)
KFP	0.0836223	−0.0477848	0.2227147
	(1.049)	(0.403)	(2.111)
FP	0.1176123	0.5216863	−0.4936150
	(0.972)	(3.863)	(−2.276)
AH	−0.0102548	−0.0158028	−0.0085715
	(−1.580)	(−1.217)	(−1.131)
OCH	0.2306035	−0.2058430	0.4368270
	(1.020)	(−0.591)	(1.523)
ESW	−0.993718	−0.0588764	−0.0692859
	(−1.515)	(−0.524)	(−0.863)
FM	−0.3494683	−0.3407674	−0.3483494
	(−3.423)	(−1.562)	(−2.968)
LOC	0.1909251	−0.0149722	0.3092575
	(2.505)	(−0.133)	(3.117)
$\bar{R}^2$	0.46055	0.55715	0.41930
F	144.66937	64.44309	86.04929

Note: t-values are given within parentheses.
*Numbers of observations are 707 and 1650 for EH^+ and EH^- respectively.

biological conditions, has a consistent effect, below or beyond the threshold level. The regression coefficients are highly significant.

Other socio-economic factors such as RW (wife's religious affiliation) and ESW also have consistent results among the three samples. However, OCH and LOC have inconsistent results. The regression coefficient of RW is negative. It is significant at the five percent level for the subsample EH^+ and not significant for the subsample EH^-. This means that when compared to families of other religions, Moslem families have a lower fertility rate. The regression coefficients of OCH and ESW are not significant for the three samples in this study; that is, the occupational status of the wife or husband does not have any significant effect on NB. Location has a negative regression coefficient for the subsample EH^+ and a positive one for the subsample EH^-. At the five percent level the first is not significant but the second one is significant. This indicates that the lower-educated, urban family tends to have a large family size. Because of this, the effect of LOC on all samples is positive and its regression coefficient is significant at the five

percent level. Beyond the threshold level, the effect of LOC on NB is negative, but the relation is not clearly defined. This means that NB is higher in rural than in urban areas, as was expected.

According to the F-values, the independent variable in this study is the explanatory variable of NB. Only 55.7 percent and 41.9 percent of the behavior of NB can be explained by the independent variables considered.

By removing DM from the model, the value of $\bar{R}^2$ declines markedly for the subsamples EH^+ or EH^-. But, the F-value remains high, meaning that all of the independent variables in the model are explanatory variables of NB. The regression coefficients and their t-values are presented in Table 10. The signs of the coefficient of regression equation in Table 10 are not different from those in Table 9 for the subsamples EH^+ and EH^-. The t-values do show some differences, however, mainly for the subsample EH^+. The regression coefficient of EW is highly significant in Table 10, but the effects of RW and FM are weak.

Earlier it was stated that urban fertility is higher than rural fertility. This condition is affected by rural families with high education as shown by the regression coefficient of

TABLE 10
NB Equations for Different Samples (without DM)

Variable	EH^+	EH^-
Constant	9.502194	8.329205
EH	0.0917953	0.0573359
	(1.304)	(0.986)
EW	−0.2160153	*
	(−4.077)	
AM	−0.1784710	−0.1775110
	(−16.166)	(−23.574)
CBF	0.4544616	0.4255106
	(8.604)	(10.569)
RW	−0.0234960	0.0754786
	(−0.203)	(0.572)
AFP	0.2631035	0.343675
	(2.080)	(4.257)
KFP	−0.0991840	0.1704584
	(−0.811)	(1.606)
FP	0.5838462	−0.4974380
	(4.187)	(−2.255)
AH	−0.0056116	−0.0098454
	(−0.420)	(−1.279)
OCH	−0.2407681	0.4726681
	(−0.668)	(1.618)
ESW	−0.1134360	−0.0681813
	(−0.978)	(0.834)
FM	−0.2991392	−0.3210531
	(−1.326)	(−2.688)
LOC	−0.0747795	0.2387849
	(−0.646)	(2.380)
$\bar{R}^2$	0.52581	0.39768
F	61.22001	91.72995

Note: t-values are given within parentheses.
*The F-level is insufficient for computation.

LOC for the subsample EH^+. For the subsample EH^- the situation is different. The urban population has a higher rate of fertility than its rural counterpart. There is an indication that upon entering the urban area, fertility increases and then declines. This hypothesis is consistent with the threshold level hypothesis which posits varying fertility behavior for different income groups. Hence, it may also be concluded that demand theory is applicable to the analysis of fertility behavior. The effect of the wife's earning power, proxied by her education, is positive below the threshold value and negative beyond it. This is in line with findings in other developing countries such as the Philippines (Encarnacion 1974). On the other hand, socio-economic and demographic factors are the main explanatory variables for fertility determinants (see Tables 11, 12,

TABLE 11
The Value of $\bar{R}^2$ Change and Simple Correlation for All Samples

Variable	$\bar{R}^2$-change	Simple Correlation
DM	0.40998	0.64030
CBF	0.02239	0.38632
EH	0.01520	−0.13119
AFP	0.00483	0.04884
FM	0.00401	−0.04914
LOC	0.00267	−0.06812
RW	0.00175	0.05959
AM	0.00086	−0.61520
AH	0.00057	0.32126
ESW	0.00055	0.00050
KFP	0.00041	−0.03394
OCH	0.00026	0.02325
FP	0.00020	0.01378
EW	0.00008	−0.19538

TABLE 12
The Value of $\bar{R}^2$ Change and Simple Correlation with Different Subsamples

	Subsample EH^+		Subsample EH^-	
Variable	$\bar{R}^2$-change	Simple Correlation	$\bar{R}^2$-change	Simple Correlation
DM	0.50474	0.71045	0.37395	0.61152
CBF	0.03185	0.46515	0.02506	0.33247
FP	0.01604	0.13151	0.00178	−0.01607
RW	0.00341	0.00379	0.00022	0.05761
FM	0.00228	−0.03433	0.00429	−0.06358
AFP	0.00183	0.01463	0.00625	0.09137
EH	0.00116	−0.13362	0.00188	−0.02782
EW	0.00212	−0.26022	0.00033	−0.10326
AM	0.00107	−0.66315	0.00137	−0.58750
AH	0.00093	0.40780	0.00049	0.27536
OCH	0.00022	−0.02754	0.00094	0.04404
ESW	0.00015	−0.03175	0.00022	−0.00920
KFP	0.00011	−0.03863	0.00107	0.04313
LOC	0.00001	−0.09050	0.00640	0.00454

and 13). Family planning program effort does not seem to be a factor that greatly affects fertility. Between socio-economic and demographic factors, the latter has the stronger effect on fertility. This finding does not support this study's hypothesis. This result indicates that there is a greater range of socio-economic conditions than those mentioned by Mauldin and Berelson (1978).

TABLE 13
The Value of $\bar{R}^2$ Change and Simple Correlation with Different Subsamples (without DM)

	Subsample EH^+		Subsample EH^-	
Variable	$\bar{R}^2$-change	Simple Correlation	$\bar{R}^2$-change	Simple Correlation
AM	0.43977	−0.66315	0.34516	−0.58750
CBF	0.06620	0.46515	0.03874	0.33247
FP	0.01016	0.13151	0.00109	−0.01607
FW	0.01192	−0.26022	—	—
AFP	0.00243	0.01463	0.00676	0.09137
FM	0.00137	−0.03433	0.00400	−0.06358
EH	0.00103	−0.13362	0.00034	−0.02782
KFP	0.00055	−0.03863	0.00108	0.04313
ESW	0.00045	−0.03175	0.00029	−0.00920
LOC	0.00024	−0.09050	0.00274	0.00454
OCH	0.00027	−0.02754	0.00104	0.04404
AH	0.00012	0.40780	0.00070	0.27536
RW	0.00003	0.00379	0.00012	0.05761

CONCLUSION

In this study several methods were used to examine fertility determinants in Sumatra. Findings showed that the recursive method does not give better results when compared to OLS. On the basis of the single equation model, it was found that socio-economic and demographic factors, family planning program efforts, and biological conditions are explanatory variables of number of children ever born (NB). Among these, demographic factors are the most important variables in the model. Family planning program effort does not show a strong influence in determining fertility behavior. This conclusion indicates that there is a wider range of socio-economic conditions.

Based on the assumption that the husband's education can be used as a proxy variable for family income, demand theory is applicable to the study of fertility behavior. There is also an indication that the threshold level exists. The effect of the husband's education on fertility is positive, below or beyond the threshold level. This is in line with the income effect hypothesis. The wife's education has a positive effect below the threshold level, and a negative one beyond it. The latter's regression coefficient is significant at the five percent level of significance.

A working wife has lower fertility when compared to a non-working wife, but the relation between fertility and the wife's occupational status is not significant. A husband's occupational status does not significantly affect the number of his children. However, the frequency of marriage does affect fertility. An increase in the number of times a wife has been married means a shorter duration of marriage and, consequently, a decrease in the number of children. This relation, though vague, is found in the high-income subsample.

The results of this study show that fertility is significantly higher in urban areas. It may be speculated that below the threshold level, the higher the educational level of a family, the higher the fertility level; beyond the threshold level, the lower the family's educational level, the higher the fertility rate. There is also an indication that when a family has just entered an urban area, fertility may increase. Later, however, it declines. This is in line with the threshold level hypothesis. Moslems have lower fertility than families belonging to other religious groups. The relation between religious affiliation and fertility is significant, except below the threshold level.

The variable, family planning program efforts, shows that the effect of family planning attitudes on fertility is positive and significant at the five percent level. The practice of family planning has a negative effect below the threshold level but becomes positive beyond this level. This relation is significant. The positive effect of program effort on fertility was not expected in the model. This may have been a result of the fact that the family planning program was conducted by a private organization, and was concentrated in urban areas where the more highly educated people reside. Thus, there is a positive association between education and program effort. This condition may have created the positive relation between program effort and fertility in this study.

A longer marriage duration causes fertility to increase. On the other hand, an increase in age at first marriage reduces fertility. These demographic variables are the main determinants of fertility in this study. Most of the fertility level variations are explained either by duration of marriage or age at first marriage. There is also a negative association between these two demographic variables.

The present study also found that the longer the period of breast-feeding, the higher the fertility of the mother. Wives with low educational levels tend to breast-feed for longer periods because they cannot afford to buy milk. But, wives who are more highly educated tend to stay at home, take care of their children, and breast-feed less.

Ideal number of children is higher in rural areas than in urban areas. There is also an indication that ideal number of children is higher than the number of children ever born.

The above findings have definite relevance to family planning policies in Sumatra. Policy makers should note that to reduce fertility it is imperative to increase age at first marriage. This may be accomplished by motivating people while they are still in school. This course of action has to be taken soon in order to reduce fertility in the future.

SOCIO-ECONOMIC DETERMINANTS OF FERTILITY IN PENINSULAR MALAYSIA

Fong Chan Onn

A large number of research studies have been done on the relationship between socio-economic development and fertility. Research in this field can be broadly classified into two interrelated categories: studies on the consequences of fertility and studies on its determinants. In terms of policy implications the former might be said to provide justifications for population policy and the latter the design for such a policy. In the consequence category is the seminal work of Coale and Hoover (1965) which in turn inspired many other studies. Conroy and Folbre (1976), for example, has a good summary of these studies. The determinants category includes studies by Weintraub (1962), Adelman (1963), Russett et al. (1964), Heer (1966), Adelman and Morris (1966), Friedlander and Silver (1967), Kasarde (1971), EKanem (1972), Janowitz (1971), Cain and Weininger (1973), Farooq and Tuncer (1974), and Bell (1976). However, except for the Cain and Weininger (1973) study which dealt with regions within the United States and the Farooq and Tuncer (1973) study which dealt with provinces within Turkey, all the other cited works are cross-country studies using aggregated data with nations as units of analysis. In terms of policy implications, these cross-country studies have been valuable. However, it would not be sufficient for a national planner to depend solely on these cross-country studies for the design and formulation of national population policies since, in many cases, intra-national differences in fertility far exceed inter-national differences. In this study we examine the determinants of fertility in Peninsular Malaysia (or West Malaysia) based on data from the 1970 Population and Housing Census which covered all the administrative districts.[1] The findings are compared with and contrasted against those of other studies. A number of possible policy implications are then drawn from this analysis. Since there are so few studies in the determinants category performed on an intra-national basis, the findings of this study will, it is hoped, contribute towards a better appreciation of intra-national differences in fertility attributable to socio-economic development.

SOCIO-ECONOMIC DEVELOPMENT IN PENINSULAR MALAYSIA

Since its independence in 1957 there have been deliberate efforts made in the form of the various five-year development plans to bring about social and economic development in Peninsular Malaysia.[2] Table 1 shows some background information on socio-economic conditions in Malaysia between 1957 and 1975. Overall, in terms of income per capita, literacy, and other indicators, there has been a steady trend of development and

[1]In 1970 Peninsular Malaysia was divided into 70 districts for administrative purposes.

[2]Since 1957 the various development plans pursued include the First Malaya Plan (1956-1960), the Second Malaya Plan (1960-1965), the First Malaysia Plan (1966-1970), the Second Malaysia Plan (1971-1975), and the Third Malaysia Plan (1976-1980).

TABLE 1
Selected Socio-Economic Indicators for Peninsular Malaysia, 1957–1975

Indicator	1957	1965	1970	1975
Literacy level (%)*	51.0	—	60.8	—
Distribution of labor force				
% in agriculture	60.9	52.1	50.2	46.1
% in manufacturing	9.5	10.9	12.5	13.5
% in services	29.6	37.0	37.3	40.4
% of population in towns with ≥ 10,000 people	26.4	—	27.1	—
Real GNP per capita (M$1970)	—	829.0	912.0	1244.0
% of GNP originating from agriculture	—	31.8	29.0	29.8
Crude birth rate (per 1000 people)	46.2	36.7	33.9	31.4
Crude death rate (per 1000 people)	12.4	7.9	7.3	6.4
Mid-year population (10^6)	6.28	8.04	9.18	10.39
Average annual population growth rate (%)	3.0	3.1	2.7	2.5

* Based upon the entire population.

SOURCE: Malaysia, Department of Statistics (1960, 1972, 1975)

modernization. The percentage of labor force in agriculture, for example, has declined from 60.9 percent in 1957 to 46.1 percent in 1975 indicating a steady relative expansion of the industrial and services sectors over the period. On the social side crude death rate, for example, has declined from 12.4 per 1000 people in 1957 to 6.4 per 1000 people in 1975, indicating a marked general improvement in the living conditions of the people over the period. However, economic development has not been uniform throughout the country.[3] The capital and the various metropolitan districts are relatively well developed while many of the rural districts, especially those on the east coast states, are relatively underdeveloped. Statistically, in such a situation where detailed regional data are available, one can use cross-sectional data to gauge the long-term effects of socio-economic development on fertility. It should be pointed out, however, that the relationship between socio-economic development and fertility is not uni-directional. Changing fertility can also affect individual socio-economic conditions and this can have a profound consequence on the overall economic development process. But analysis of these aspects, though important, is beyond the scope of this study.

SOURCES OF DATA

While the intention was to go as far back as possible, district data from the 1947 and 1957 Censuses were not tabulated (either in published or unpublished form) and, much to our dismay, we found that the raw data collected from these Censuses had been either misplaced or destroyed.[4] Hence, we were constrained to base our analysis upon the extensive socio-economic and fertility data collected in the 1970 Population and Housing Census, both published (Malaysia, Department of Statistics 1975) and unpublished. Data on mortality were extracted from 1970 vital statistics published by the Department of Statistics (Malaysia, Department of Statistics 1972). Data from a number of other sources were also used and these are acknowledged in the Appendix (p. 61) containing the list of variables used in the study.

[3]This is very well documented in Malaysia, Department of Statistics (1976: 199–217).

[4]Private communication with the Population Division of the Department of Statistics, Kuala Lumpur, 1977.

THEORETICAL BASIS FOR THE STUDY

This section discusses the measures of fertility and socio-economic variables affecting fertility. A summary of the variables concludes this section.

Measures of Fertility

As a measure of fertility, it would be ideal to use the "desired" number of conceptions. However, Malaysian data on fecundity are not available, neither are data on miscarriages, still births, abortions, and so on. In this study, the number of live births was substituted for desired conception. We used two bases for the live birth figures — the average size of the population, and the number of women between the ages of 15 and 44 years — leading to the use of crude birth rate (y_1) and general fertility rate (y_2) as the two measures of fertility.

Socio-Economic Variables Affecting Fertility

In this section we provide some justification for the selection of the socio-economic variables incorporated in this study.

Income

The consumption aspect of the number of children suggests that income is an important variable affecting fertility. The income data used in this study was the per capita district gross product (x_1). Previous studies on the relationship between per capita income and birth rate have indicated conflicting results. The Russett et al. study (1964) showed that partial correlation between per capita income and birth rate was negative, while Weintraub's (1962) was positive. Adelman (1963) also found a positive partial correlation between age-specific birth rate and per capita income for developed countries and for a sample including developed and developing countries. All these studies were on a cross-country basis and our study is innovating in that it attempts to perform this kind of analysis on an intra-national basis.

Child mortality

It is generally believed that a high level of child mortality has the effect of increasing fertility since the higher the child mortality level, the greater is the number of births needed to achieve a given family size (United Nations 1953: 76). Weintraub (1962) found a statistically significant partial correlation between birth rate and infant mortality rate. On the other hand, Leiberstein (1957) pointed out that the higher the survival rate, the greater is the economic return provided by a child and, therefore, the more children desired. In the present study both infant mortality rate (x_2) and toddler mortality rate (x_3) were included so that an assessment of the relationship between child mortality and fertility, within the Malaysian context, could be made.

Population density

Adelman (1963) found a negative relationship between population density and birth rates and concluded that ". . . over-population tends to generate its own antidote." In order to explore this issue, the population density variable (x_4) as well as the dependency ratio variable (x_5) were included in this study.

Urbanization

Urbanization, as a factor affecting national fertility, has received great attention (United Nations 1953: 75, 78). It is perceived that urbanization can enhance the urban/rural differential in the "taste" for children and in the level of contraceptive knowledge. In order to explore the effects of urbanization within a country, a number of variables reflecting urbanization (percentage of population in towns between 1,000 and 9,999

people [x_6], percentage of population in towns $\geq 10{,}000$ people [x_7], percentage of district gross product originating from agriculture [x_8], and percentage of employed males employed in agriculture [x_{10}]) were included in this study. Another variable (percentage of economically active males employed [x_9]) was also included since urbanization is often related to a higher level of open unemployment.

Level of education

Adelman (1963) and Russett et al. (1964) found negative partial correlations between birth rate and the societal level of education. Education can affect birth rate through a number of channels, including changes in the level of contraceptive knowledge, taste for children, and economic productivity. These influences are difficult to separate, but the level of education is important. Hence, it was included in this study as variables x_{13} (percentage of males ≥ 15 years of age without formal schooling), x_{14} (percentage of females ≥ 15 years of age without formal schooling), and x_{15} (percentage of population literate).

Communications

It is generally felt that better communication facilities leading to better contact with the outside world can reduce the fertility level through "demonstration effect" or exposure to the modern small-family norm. In this study we used the motor vehicle density variable (x_{16}) as a proxy variable for the status of communication facilities. The other variable used as proxy variable for relative exposure to modern ideas was the number of doctors per 1,000 married women between 15 and 44 years of age (x_{23}).

Differences in culture

Malaysia is a multi-racial and multi-cultural society. Wrong (1962) asserted that in multi-racial or multi-religious societies, fertility differences between such groups may be of intrinsic interest. Rivalry between groups may sometimes take the form of competitive efforts to encourage large families in order to gain ascendency in numbers in the future. It is well known that there are significant differences in the fertility rates of the three main racial groups — Malays, Chinese, and Indians — in Malaysia (Saw 1966; Retherford and Cho 1973). Whether these differences are due to the effect of competitive efforts or the effect of religious and cultural differences towards economic development and fertility is not clear. Nevertheless, the differences in fertility rates indicate the importance of the extent of racial homogeneity in each district for this study. Thus, in this study we incorporated the racial composition of the district population (percentage of Malays in district population [x_{17}], percentage of Chinese in district population [x_{18}], and percentage of Indians in district population [x_{19}]).

Social status of women

Sociologists suggest that differences in the societal attitudes towards women may cause differences in fertility. Specifically, the more prevalent the belief that the proper role of women is to "stay at home and bear children," the higher the fertility. It is then inferred that the higher the status of women in society the lower the fertility. In this study, we used the variables percentage of females ≥ 10 years staying at home (x_{20}), percentage of females between 10 and 19 years married (x_{21}), the ratio of female literacy to male literacy (x_{22}), percentage of economically active females employed (x_{11}), and percentage of employed females employed in agriculture (x_{12}) to indicate the relative social status of women in the district.

Overcrowding

It has been hypothesized (Stycos 1964) that overcrowded living conditions limit the use of

most contraceptives except for oral contraceptives. Thus, this tends to increase fertility. On the other hand, overcrowded living conditions undoubtedly play a very important role in limiting fertility since it serves as a constant reminder to the couple of the difficulty of accommodating another child. The effect of overcrowding on fertility is, thus, not clear. To examine this we included the number of persons per bedroom in the dwelling (x_{26}) as an independent variable in this study.

Basic amenities in households

It has been argued further by Stycos (1964) that lack of basic amenities like electricity and running water supply in households limit the use of contraceptive methods other than oral contraceptives. To examine the effect of this proposition on fertility we included the variables, percentage of permanent quarters with electricity service (x_{24}) and percentage of permanent quarters with running water supply (x_{25}) as independent variables in this study.

Summary of Variables

This study used two fertility measures — the crude birth rate and the general fertility rate — as dependent variables. As independent variables the study used a total of 26 socio-economic variables, reflecting income level, child mortality, population density, degree of urbanization, level of education, status of communications, differences in culture, the social status of women, degree of overcrowding, and the existence of basic amenities in households. The full list of these variables in contained in the Appendix (p. 61).

METHODOLOGY

Given the large number of independent (or predictor) variables included in the study, an analysis using correlational or multiple regression techniques would have brought with it all the attendant problems of interpreting the relative importance of the independent variables in accounting for variation in the dependent (or criterion) variables because of multicollinearity among the independent variables (Green and Tull 1975: Chapter 12). Further, a correlational or multiple regression analysis can often lead to fuzzy conclusions since, in many instances, an independent variable can be a proxy for a more important underlying factor.[5] Only when a variable is interpreted together with the other independent variables with which it is highly correlated can its real meaning be uncovered. For these reasons we used principal-component factor analysis (Harman 1970; Rummel 1970) as the technique of analysis in this study. It is generally felt that this technique is a good one for exploring the relative importance of a large number of variables acting simultaneously on a "dependent" variable. The important dimensions underlying the large number of predictor variables can be identified when they are separated out into principal orthogonal groups. Hence, their real causal effects on the criterion variables can be uncovered. It must be pointed out that one valuable consequence of using principal-component factor analysis is that, in the final results, a predictor variable may be a proxy for a factor quite different from that specified in the section on the theoretical basis for the study. This section only provided possible a priori justification for the incorporation of variables. It did not, and should not, attempt to bind a variable to be a proxy variable to any underlying factor in the final results. This can only be done when the variables have been analyzed in totality, as is done in factor analysis.

[5]For example in this study, the variable, percentage of Chinese in district population (x_{18}) can indicate competitive efforts or inherent cultural differences towards fertility.

FINDINGS

This section is divided into two main parts, namely, the findings on the dependent variables, i.e., the crude birth rate and the general fertility rate, and findings on the determinants of fertility.

Dependent variables

The data on crude birth rate and general fertility rate were first analyzed. In the median district the crude birth rate and general fertility rate are 33.17 and 176.64 respectively. These are about equal to the West Malaysian average of 33.9 (crude birth rate) and 182.8 (general fertility rate). The distribution of the two fertility measures are pictorially presented in Figures 1 and 2. From Figure 1 it can be seen that in terms of crude birth rate, most of the districts in Kelantan and Trengganu are between 10 percent and 30 percent above the median value. The coastal districts of Kedah also have fairly high crude birth rates when compared to the district with the median value. On the other hand, the rural districts in Selangor and Malacca have low crude birth rates when compared to the median district. Most of the other districts are within ± 10 percent of the median value. In terms of general fertility rate, from Figure 2, it can be seen that, again, most of the districts of Kelantan and Trengganu have general fertility rates which are between 10 percent and 30 percent higher than the median district. The northern districts of Johore — Segamat, Muar, Kluang, and Mersing — and the northeastern districts of Negeri Sembilan also have general fertility rates which are between 10 percent and 30 percent higher than the median district. However, the coastal districts of Negeri Sembilan and Selangor and the rural districts of Malacca appear to have general fertility rates which are between 10 percent and 30 percent below the median district. Most of the other districts are within ± 10 percent of the median value.

Determinants of Fertility

Findings related to the determinants of fertility are presented as follows: pooled sample, the effects of factors on fertility measures in the pooled sample, and the effects of the factors on rich and poor districts.

Pooled sample

The principal-component factor analysis was performed on the 26 independent socio-economic variables and two fertility measures in order to extract the main dimensions (factors) of the socio-economic variables, and the relationship of these factors with the fertility measures.[6] We first performed the analysis on the data from the pooled sample of 70 districts. One of the first decisions in factor analysis is specifying the number of factors to be rotated. This is not a straightforward process. Based on the analyses of results produced by rotating four through ten factors, the number of factors was set at five using the inferential criterion of Rummel (1970). The summary of the results of this analysis is presented in Table 2. In this table we have included only factor loadings whose absolute values are at least 0.3 and have assigned each variable to that factor on which it has the highest or second highest loading. The commonality (h_i^2) of each variable is given in the right-hand column of the table. From the table it can be seen that a reasonable separation exists among the factors. Only 5 out of the 26 socio-economic variables have a loading of 0.4 or more on more than one factor. The five factors listed accounts for over 66 percent of the variance in the crude birth rate and over 63 percent of the variance in the general fertility rate.

[6]The factor analysis program available in the IBM 360 Scientific Subroutine Package (SPS) was used and the principal factors were rotated using the varimax criterion.

FIGURE 1
Peninsular Malaysia — Crude Birth Rate by District

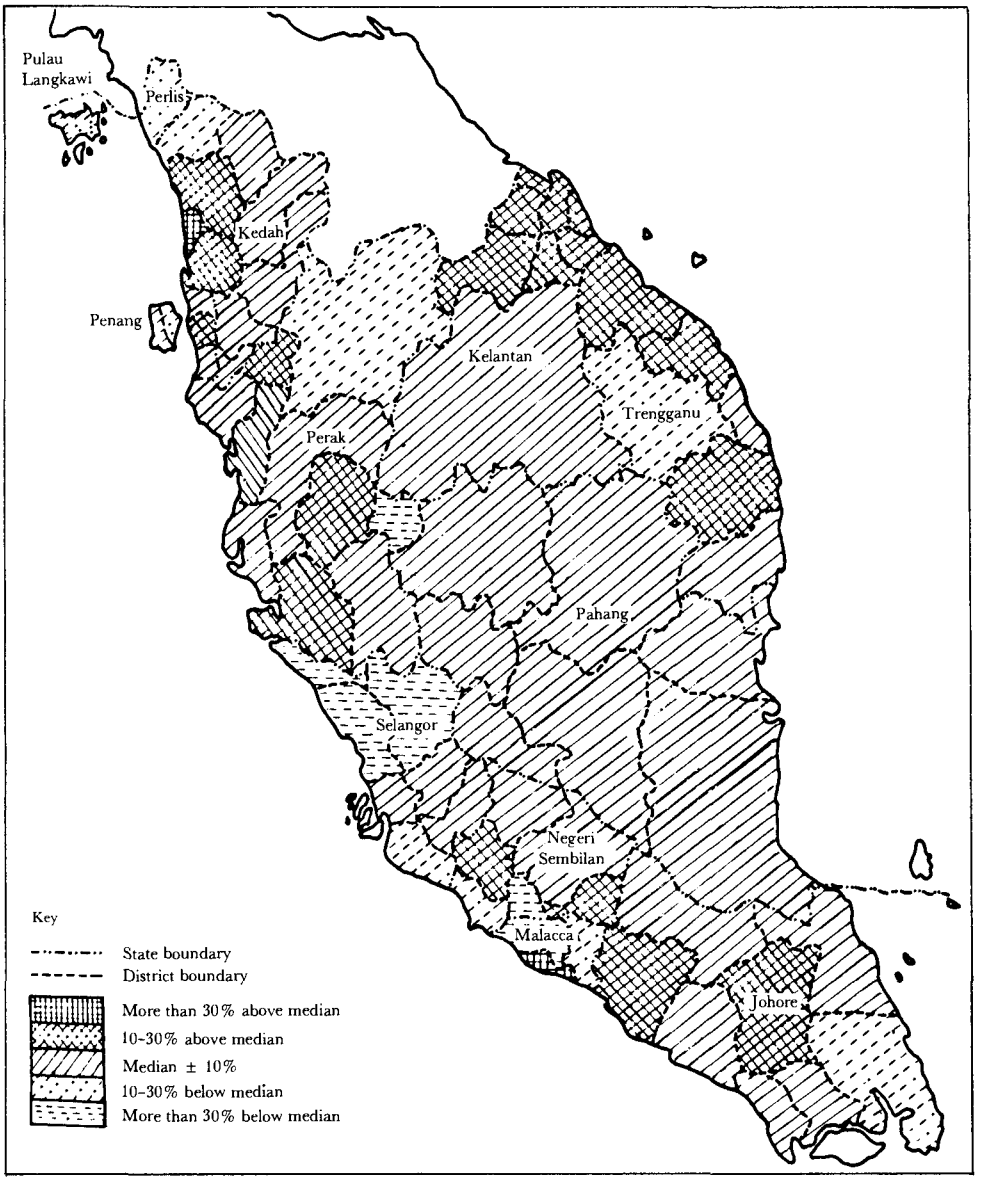

FIGURE 2
Peninsular Malaysia — General Fertility Rate by District

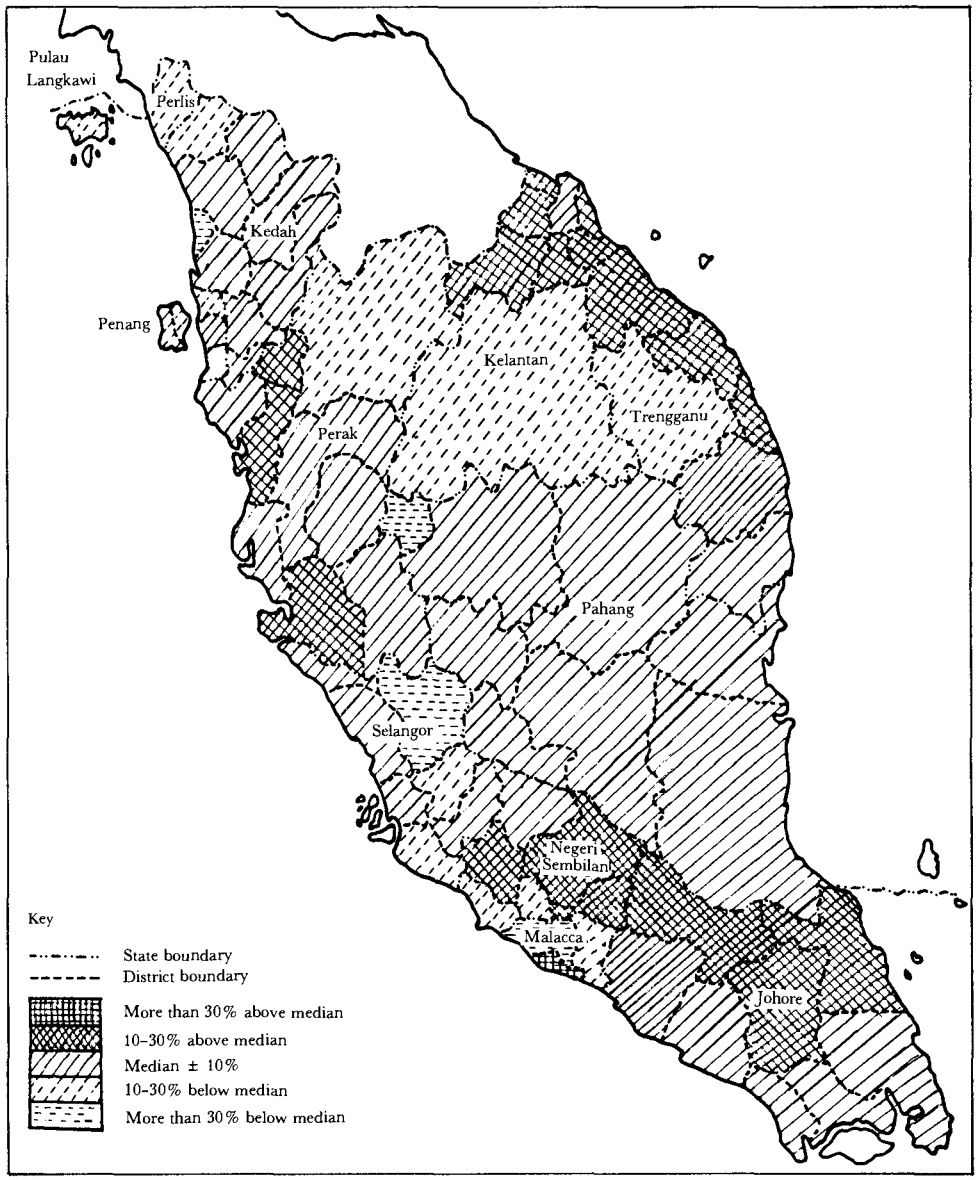

TABLE 2
Principal-component Factor Loadings for Pooled Sample

	Item	Factors I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	h_i^2
x_2	Infant mortality rate		0.99				0.99
x_3	Toddler mortality rate		0.38				0.30
x_{11}	% of economically active females employed			0.85			0.77
x_{12}	% of employed females employed in agriculture			0.84			0.87
x_{20}	% of females ≥ 10 years of age staying at home			−0.80			0.66
x_{21}	% of females aged 10–19 years married	−0.51		−0.68			0.79
x_{22}	Ratio of female to male literacy	−0.30		0.33			0.21
x_{23}	No. of doctors per 1,000 MWRA				0.93		0.92
x_{24}	% of permanent quarters with electricity service				0.91		0.91
x_{25}	% of permanent quarters with running water supply				0.82		0.76
x_4	Population density					0.93	0.95
x_6	% of population in towns with 1,000–9,999 people					0.43	0.22
x_7	% of population in towns with ≥ 10,000 people	0.44				0.41	0.40

TABLE 2 (Continued)
Principal-component Factor Loadings for Pooled Sample

	Item	Factors I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	h_i^2
x_5	Dependency ratio			−0.35		0.61	0.60
x_{26}	No. of people per bedroom in dwelling					0.97	0.96
x_{17}	% of Malays in district population	−0.86					0.87
x_{18}	% of Chinese in district population	0.76		−0.39			0.79
x_{19}	% of Indians in district population	0.67				−0.35	0.60
x_{16}	No. of motor vehicles per 1000 people	0.85			0.38		0.92
x_1	District gross product per capita	0.80					0.69
x_8	% of district gross product originating from agriculture	−0.58			−0.35	−0.37	0.76
x_{13}	% of males ≥15 years without formal schooling	−0.67		−0.54		−0.32	0.84
x_{14}	% of females ≥15 years without formal schooling	−0.71		−0.45			0.73
x_9	% of economically active males employed	0.65					0.56
x_{10}	% of employed males employed in agriculture	−0.97					0.96
x_{15}	% of population literate	0.62		0.41			0.60
y_1	Crude birth rate	−0.11	0.05	−0.13	−0.03	−0.79	0.66
y_2	General fertility rate	−0.18	0.05	−0.22	−0.21	0.71	0.63

The five factors can be broadly interpreted as:

Factor I — Status of Economic Development and Literacy. This factor consists of 11 variables which reflect the status of economic development in the district like district gross product per capita, percentage of district gross product originating from agriculture, percentage of economically active males employed, and the number of motor vehicles per 1,000 people, and variables which reflect the racial composition of the district. In the context of Malaysian economic development, the Chinese (and to a certain extent the Indians) have a history of being actively involved in trading and industrial activities while the Malays have been involved mainly in traditional agricultural activities (Lim 1973). Within this factor we also have variables that relate to the status of literacy in the district, e.g., the percentage of males (and females) ≥ 15 years of age without formal schooling and the percentage of population literate. These literacy variables are, in general, related to economic development variables (e.g., the Pearson correlation coefficient between district gross product per capita and percentage population literate [r_{xy}] is 0.53). This direct relationship between literacy and economic development variables can be explained partially by the fact that districts with higher industrial activities and higher per capita district gross product have tended to receive higher educational allocations from the central government (Malaysia, Economic Planning Unit 1974).

Factor II — Child Mortality. This factor contains both the majority rate variables relevant to this study, i.e., infant mortality rate and toddler mortality rate. The factor loading of the infant mortality rate on the factor is high, 0.99. However, the factor loading of the toddler mortality rate on the factor is rather low, only about 0.38.

Factor III — Status of Women. This factor contains five variables all relating to the status of women in terms of labor force participation and literacy rate relative to males in the district. A strong direct relationship between percentage of economically active females employed and the percentage of employed females employed in agriculture ($r_{xy} = 0.83$) was found.[7] In the Malaysian context, especially in the rural areas, female involvement in agricultural activities is not an indication of "low status." Rather, it is an indication of their direct participation in household economic activities and household decision-making. There is also a direct relationship between the percentage of economically active females employed and the female to male literacy ratio ($r_{xy} = 0.58$), indicating that there tends to be a higher rate of female participation in the labor force in districts where the female to male literacy ratio is higher. Conversely, there is an inverse relationship between the percentage of females $\geq$ 10 years of age staying at home and the female to male literacy ratio ($r_{xy} = 0.41$), and an inverse relationship between the percentage of females between 10 and 19 years of age married and the female to male literacy ratio ($r_{xy} = -0.32$). In brief, then, this factor indicates the relative standing of the females in the district in terms of their literacy rate *vis-à-vis* the males and in terms of their participation in the economic activities in the area.

Factor IV — Availability of Social Amenities. This factor consists of three variables reflecting the availability (or non-availability) of social amenities to women, viz., the number of doctors per thousand married women in the reproductive age; the availability of social amenities in private dwellings, i.e., electricity service; and percentage of permanent quarters with running water supply. The factor loading of each variable on the factor is very high, each being being over 0.82.

Factor V — Demographic Pressure. This factor includes five variables which describe the status of "overcrowding" or demographic pressure in the district. Three of the variables — population density, percentage of population in towns between 1,000 and 9,999

[7]However, there is no apparent relationship between percentage of economically active males employed and percentage of employed males employed in agriculture ($r_{xy} = 0.05$).

than those who had never worked except among the most educated group, where women who never worked had fewer live births than those who worked (rural sample) or almost the same number of live births (urban sample). See Tables 11 and 12.

Attitude Towards Family Planning and Fertility

In the Longitudinal Studies, married women were asked, both directly and indirectly, about their opinions on family planning (FP). The "indirect" question was, "If you knew a simple and harmless method for preventing too many pregnancies or having more children than are wanted, would you approve or disapprove of using that method?" In addition to this question, women in urban areas were asked the "direct" question, "Do you approve or disapprove of FP?"

Data in Table 13 seem to show that women who have positive attitudes towards FP have lower fertility. For example, women who approved of FP had 3.6 live births (indirect question) and 3.3 live births (direct question). The relationship between these two variables — attitude towards FP and number of live births — is strong (gamma = 0.28).

When the data were controlled for total duration of women's marriages, it was seen that, except for those who had been married for five to nine years, urban women who disapproved of FP generally had more live births than those who approved of it. Regardless of their attitude towards FP, the women who had been married for five to nine years had identical fertility, i.e., 2.6 live births. Women who had no specific attitude towards FP or who didn't understand the term had the highest number of live births. See Table 13.

The effect of the husband's attitude towards FP on their wives' fertility was also investigated by the study. In the rural sample, information on the husband's attitude was obtained by asking the wife if she had ever talked to her husband about FP and what his opinion was. In the urban sample the male household head himself was queried. He was asked, "Do you approve or disapprove of FP?"

TABLE 13
Mean Number of Live Births by Women's Attitude Towards Family Planning (Direct Question) and by Total Duration of Women's Marriages, Urban Areas

Women's Attitude Towards FP	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Approve	1.0 (301)	2.6 (260)	4.7 (621)	4.5 (27)	3.3 (1209)
Disapprove	1.3 (20)	2.6 (14)	5.5 (54)	* (3)	4.1 (91)
Depends	* (3)	* (9)	4.6 (29)	* (4)	3.9 (45)
Don't know	1.0 (49)	2.9 (36)	5.8 (308)	4.5 (28)	4.9 (421)
Don't understand "FP"	1.2 (46)	2.6 (47)	5.6 (314)	4.7 (29)	4.8 (436)
TOTAL	1.1 (419)	2.6 (366)	5.2 (1326)	4.5 (91)	4.0 (2202)

Note: The x^2 values between women's attitude towards FP and number of live births are significant at 0.001.

*Mean not calculated. Number of respondents is less than 10.

TABLE 11
Mean Number of Live Births by Women's Work Experience Before or After Marriage and by Education, Rural Areas

Women's Work Experience	Mean No. of Live Births by Women's Education						
	None/Less than Primary		Primary		Secondary or Higher		Total
Before marriage							
Yes	5.7	(198)	3.3	(213)	3.3	(27)	4.4 (438)
No	6.4	(608)	4.5	(742)	2.7	(19)	5.3 (1369)
After marriage							
Yes	5.7	(25)	3.7	(152)	3.7	(20)	4.8 (197)
No	6.3	(619)	4.3	(803)	2.6	(26)	5.1 (1448)

TABLE 12
Mean Number of Live Births by Women's Work Experience Before or After Marriage and by Education, Urban Areas

Women's Work Experience	Mean No. of Live Births by Women's Education								
	None/Less than Primary		Primary		Secondary		High School or Higher		Total
Before marriage									
Yes, with wages	4.4	(193)	3.1	(384)	2.4	(169)	2.0	(131)	3.1 (877)
Yes, without wages	5.7	(232)	4.0	(294)	3.0	(36)	*	(4)	4.6 (566)
Never	5.8	(290)	4.1	(375)	3.1	(123)	2.1	(19)	4.5 (807)
After marriage									
Yes, with wages	5.1	(238)	3.5	(374)	2.6	(148)	2.0	(123)	3.6 (883)
Yes, without wages	5.9	(209)	4.3	(296)	3.2	(45)	*	(7)	4.8 (557)
Never	5.2	(268)	3.4	(383)	2.8	(235)	2.0	(24)	3.9 (910)

*Mean not calculated. Number of respondents is less than 10.

This indicates that education, more than work experience, has a strong effect on the number of live births. Moreover, among the women who had worked, the difference in the number of live births between the least educated and the most educated was smaller than among those women who had never worked. This holds true for both the rural and urban samples. This finding further shows that education influences fertility more than the experience of working for wages does. Among women with the same level of education, those who had worked for wages before or after marriage had fewer live births

closer to the group who worked only after marriage. Women who had never worked at all had the highest fertility, i.e., 5.3 live births. Among urban women, working for wages both before and after marriage suppresses fertility to the lowest level. Findings from the urban sample, like those from the rural one, also show that working for wages only before marriage seems to affect fertility more than working for wages only after marriage. See Tables 8 and 9.

The probability of an inverse relationship between female employment and fertility is high if the wife works for pay rather than as an unpaid or a self-employed worker, or if she works outside the home rather than at home. Table 10 presents the data showing the relationship between place of work and fertility. It is quite apparent that women who had worked for wages both before and after marriage and whose places of work were outside the home had fewer live births than those who had worked at home. One interesting point that should be noted is that among women who had worked but had not received wages, more live births were noted for those who had worked away from home than those who had worked at home. Thus, it may be said that place of work has a positive effect on fertility.

TABLE 10
Mean Number of Live Births by Women's Work Experience and by Place of Work, Urban Areas

Women's Work Experience	Mean No. of Live Births by Women's Place of Work					
	Home	Outside Home	Never Worked	Total		
Before marriage						
Yes, with wages	3.7 (173)	2.9	(701)	*	(0)	3.1 (874)
Yes, without wages	4.6 (210)	4.7	(352)	*	(0)	4.6 (562)
Never	* (0)	*	(0)	4.5	(809)	3.1 (809)
TOTAL	4.2 (383)	3.5	(1053)	4.5	(809)	4.0 (2245)
After marriage						
Yes, with wages	3.8 (271)	3.4	(608)	*	(0)	3.6 (879)
Yes, without wages	4.6 (265)	5.0	(295)	*	(0)	4.8 (560)
Never	4.2 (536)	4.0	(903)	3.9	(810)	4.0 (2249)

Note: The x^2 values between place of work before marriage and number of live births are significant at 0.001 for both rural and urban areas.
The gamma values between these two variables are 0.11 for both the rural and urban samples.

*Mean not calculated. Number of respondents is less than 10.

The combined effect of women's work experience and their education on the number of their live births was investigated by this study. The previous analyses have shown that both educational attainment and women's work experience have a tendency to decrease the number of live births. Data in Tables 11 and 12 show that live births of women who had worked or had never worked for wages decreased when their education increased.

Within the most educated group, women who had never worked for wages before or after marriage had fewer live births (in the case of the rural sample) or almost the same number of live births (in the case of the urban sample) as those women who had worked.

When controlled for the total duration of women's marriages, the data show that working for wages did not have a strong impact on the number of live births of women who have been married for less than five years. This is true for both rural and urban areas. It is interesting to note that work experience before marriage had different effects on the fertility of women who knew the duration of their marriage and those who did not. Women who had worked for wages and did not know the duration of their marriage had more live births than those who had never worked.

The above results confirm the hypothesis that women who worked for wages have fewer live births than those who had never worked.

The results of the statistical analysis indicate that working for wages *before* marriage tends to have a stronger influence on the number of live births than working for wages *after* marriage. The data in Tables 8 and 9 confirm this finding and assess the individual and combined effects of work experience on fertility.

Data from the rural sample clearly demonstrate that work experience only before marriage had a stronger influence on number of live births than work experience only after marriage, with women in these categories having 4.0 and 4.9 live births respectively. The number of live births among women who had worked for wages both before and after marriage was somewhere between the two groups mentioned above, but

TABLE 8
Mean Number of Live Births by Women's Work Experience Before and After Marriage, Rural Areas

Women's Work Experience Before Marriage	Mean No. of Live Births by Women's Work Experience After Marriage		Total
	Yes	No	
Yes	4.7 (242)	4.0 (197)	4.4 (439)
No	4.9 (118)	5.3 (1258)	5.3 (1376)
TOTAL	4.8 (360)	5.2 (1455)	5.1 (1815)

TABLE 9
Mean Number of Live Births by Women's Work Experience Before and After Marriage, Urban Areas

Women's Work Experience Before Marriage	Mean No. of Live Births by Women's Work Experience After Marriage			Total
	Yes, With Wages	Yes, Without Wages	Never	
Yes, with wages	2.9 (510)	3.8 (91)	3.1 (276)	3.1 (877)
Yes, without wages	4.5 (140)	4.8 (318)	4.2 (109)	4.6 (567)
Never worked	4.4 (233)	5.3 (151)	4.3 (425)	4.5 (809)
TOTAL	3.6 (883)	4.8 (560)	3.9 (810)	4.0 (2253)

lost none of their children. The relationship between these two variables in the urban sample is even stronger than that found in the rural sample (gamma = 0.70).

When the data are controlled for the total duration of women's marriages, the partial relationships in both the rural and urban samples are exactly the same as the original relationship. These results confirm the hypothesis that women with more infant deaths have more live births.

Women's Work Experience and Fertility

In the search for ways to encourage low fertility, increasing female labor force participation, particularly in the monetary sector of the economy, has often been mentioned. The rationale for this is that occupational roles can serve as an alternative to women's familial and maternal roles.

Table 7 presents data showing the relationship between a woman's work experience before marriage and number of live births. It is evident that women who had worked for wages before marriage had fewer live births than those who had never worked or who had worked but not for wages. The latter two groups of women had very similar levels of fertility, i.e., 4.5 and 4.6 live births, respectively. Rural women who had worked for wages had 0.9 live births or 17 percent less than those who had never worked at all. It seems, therefore, that working influences a woman's fertility. The relationship between these two variables is significant (gamma = 0.19). In the urban sample, women who had worked for wages before they married had 23 percent less live births than women who had never worked for wages. Thus, in urban areas, working for wages seems to have a stronger influence on fertility than it does in rural areas. Furthermore, the gamma value for these two variables in the urban sample is 0.26.

TABLE 7
Mean Number of Live Births by Women's Work Experience Before Marriage and by Total Duration of Women's Marriages

Women's Work Experience Before Marriage	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5–9	10 and Above	Don't Know	Total
Rural					
Yes	1.1 (104)	2.8 (70)	6.1 (248)	5.7 (17)	4.4 (439)
Never	1.1 (184)	3.0 (185)	6.6 (947)	5.2 (57)	5.3 (1373)
TOTAL	1.1 (288)	3.0 (255)	6.5 (1195)	5.3 (74)	5.1 (1812)
Urban					
Yes, for wages	1.0 (243)	2.4 (201)	4.5 (401)	4.9 (32)	3.1 (877)
Yes, without wages	1.2 (80)	2.9 (56)	5.5 (405)	4.7 (26)	4.6 (567)
Never	1.1 (105)	2.8 (114)	5.5 (551)	4.0 (37)	4.5 (807)
TOTAL	1.1 (428)	2.6 (371)	5.2 (1357)	4.5 (95)	4.0 (2251)

Note: The x^2 values between work experience before marriage and number of live births are significant at 0.001 for both the rural and urban areas.

combination of education and an urban environment have more influence on women's fertility than men's education (on their wives' fertility) and the combination of education and a rural environment.

Since both husbands' and wives' educational levels had a tendency to decrease fertility, it may be expected that highly educated couples would also have fewer live births than the less educated ones. This hypothesis is strongly confirmed in both the rural and urban samples. For example, couples with the lowest educational levels in the rural areas had 6.3 live births, compared with only 4.2 live births among couples in which both husband and wife had the highest level of education. In urban areas, couples with very little education or none at all had 5.8 live births, while college-educated couples had only 1.8 live births. See Tables 4 and 5.

Infant Mortality and Fertility

The data on the number of infant deaths and live births presented in Table 6 show the relationship between these two variables. In both the rural and urban samples, the connection between the number of infant deaths and live births is apparent. The replacement effect seems to play a significant role in increasing the number of live births. In rural areas, the number of live births increased sharply as the number of infant deaths increased. Women who had three or more infant deaths had 2.4 times as many live births as women who lost none of their children. The relationship between the number of infant deaths and the number of live births is a very strong one (gamma = 0.59). In urban areas, where the mortality rate is generally lower than in rural areas, the relationship between fertility and infant mortality is very similar to that found in the rural sample. Women who lost two or more children had 2.5 times more live births than women who

TABLE 6
Mean Number of Live Births by Number of Infant Deaths and by Total Duration of Women's Marriages

Number of Infant Deaths	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Rural					
0	1.1 (271)	2.8 (207)	5.7 (734)	4.8 (56)	4.2 (1268)
1	1.8 (18)	3.5 (39)	6.7 (261)	* (5)	6.0 (323)
2	* (2)	* (8)	8.1 (126)	* (7)	7.7 (143)
3 and above	* (0)	* (3)	10.4 (78)	* (7)	10.1 (88)
TOTAL	1.1 (291)	3.0 (257)	6.5 (1199)	5.4 (75)	5.1 (1822)
Urban					
0	1.1 (412)	2.5 (339)	4.5 (1016)	3.6 (72)	3.4 (1839)
1	1.9 (13)	3.4 (28)	6.6 (203)	6.5 (13)	6.0 (257)
2 and above	* (2)	* (3)	8.6 (76)	* (5)	8.4 (86)
TOTAL	1.1 (427)	2.6 (370)	5.1 (1295)	4.4 (90)	4.0 (2182)

Note: The x^2 values between number of infant deaths and number of live births are significant at 0.001 for both the rural and urban areas.

*Mean not calculated. Number of respondents is less than 10.

TABLE 5
Mean Number of Live Births by Wife's and Husband's Education, Urban Areas

Wife's Education	Mean No. of Live Births by Husband's Education: None/Less than Primary		Primary		Secondary		High School		College		Total	
None/Less than Primary	5.8	(359)	5.2	(182)	4.8	(51)	*	(3)	*	(5)	5.6	(600)
Primary	4.5	(96)	4.0	(513)	3.7	(218)	3.8	(38)	3.2	(18)	3.9	(883)
Secondary	3.5	(15)	2.8	(47)	3.1	(126)	2.7	(42)	2.6	(41)	2.9	(271)
High School	*	(3)	*	(0)	1.6	(14)	2.1	(27)	2.4	(26)	2.2	(70)
College	*	(0)	*	(1)	*	(6)	*	(8)	1.8	(49)	2.0	(64)
TOTAL	5.5	(473)	4.2	(743)	3.6	(415)	2.9	(118)	2.5	(139)	4.2	(1888)

*Mean not calculated. Number of respondents is less than 10.

areas, substantially reduced the number of live births. The strong relationship between educational level attained and number of live births is indicated by a gamma of 0.41 in rural areas and 0.46 in urban areas.

When the total duration of women's marriages is controlled in both samples, education showed very little effect on fertility among women who had been married less than five years. For example, urban women with no education or less than a primary education had 1.2 live births while those with a college education had 1.0 live births. This may be due to the fact that women, regardless of their education, tend not to inhibit pregnancy in the early years of marriage. However, among those with a longer marriage duration, i.e., five to nine years and ten years or more, education seems to exert more influence on fertility. For example, among women who had been married ten years or more, those with a college education had only 2.3 live births, compared with 5.9 live births among those who had very little education or none at all. Generally, the partial relationships are similar to the original relationships. See Table 3.

The present study compared the effect of women's education on their fertility and the men's education on the fertility of their wives. The combined effect of both the women's and men's education on fertility was also investigated. Information in Tables 4 and 5 generally indicate that lower educated women or men, regardless of their spouse's education, had similar levels of fertility. For example, among those women and men with little or no education, the number of live births was 6.3. In the rural areas, men's wives had 6.2 live births. In the urban areas the corresponding figures were 5.6 and 5.5 respectively. However, as the women's educational levels rose, they had fewer live births than the wives of men having the same educational backgrounds. For example, in rural areas, women with a secondary or higher education had 3.9 live births while the wives of men with the same education had 4.5. The data show that women's education reduces fertility more efficiently than does men's education. For example, in rural areas, women's education reduced fertility by 39 percent, i.e., from 6.3 to 3.9 live births, while men's education reduced the fertility of their wives only by 27 percent, i.e., from 6.2 to 4.5 live births. In urban aras, the reduction rate is 64 percent, i.e., from 5.6 to 2.0, and 54 percent, i.e., from 5.5 to 2.5 for women and men (their wives) respectively. In addition, rural women with little or no education but whose husbands have higher education, i.e., primary education, had 6.3 live births. However, when the husbands' and wives' educational backgrounds were reversed, women only had 5.7 live births. This trend is also seen in urban areas and holds true for those in the higher education categories as well. Thus, it is clear that women's educational background and the

TABLE 4
Mean Number of Live Births by Wife's and Husband's Education, Rural Areas

Wife's Education	Mean No. of Live Births by Husband's Education							
	None/Less than Primary		Primary		Secondary or Higher		Total	
None/Less than primary	6.3	(407)	6.4	(299)	4.3	(11)	6.3	(717)
Primary	5.7	(108)	4.6	(612)	4.8	(40)	4.8	(760)
Secondary or higher	*	(1)	*	(8)	4.2	(24)	3.9	(33)
TOTAL	6.2	(516)	5.2	(919)	4.5	(75)	5.5	(1510)

*Mean not calculated. Number of respondents is less than 10.

Education and Fertility

Results of the Longitudinal Studies clearly indicated that the urban population received substantially more schooling than the rural population. Furthermore, males received more schooling than females, and the younger generation received more schooling than their elders did.

Data from Table 3 confirm the hypothesis of an inverse relationship between education and fertility. In both the rural and urban samples, the less educated women had a higher number of live births than those with more education. For example, rural women who had no education or had less than a primary education had 6.2 live births. Urban women with the same educational background had 5.4 children. In contrast, women with the highest level of education in rural areas (secondary or higher) had only 3.0 live births, whereas highly educated (college or higher) urban women had only 1.9 live births. The difference between the highest and the lowest fertility groups in the rural sample is 3.2 live births (6.2 - 3.0 = 3.2). In the urban sample it is 3.5. Urban women generally had less live births than women with the same educational level in the rural sample. For example, at the lowest educational level, i.e., no education or less than a primary education, women in rural areas had a fertility rate 15 percent higher than women in urban areas (6.2 versus 5.4). If the difference in the number of live births between the least and the most educated groups is used as an indicator of the effect of education on reducing fertility, it may be said that education in urban areas reduced fertility by about 65 percent (from 5.4 to 1.9 live births). In rural areas, the corresponding figure is 52 percent (from 6.2 to 3.0). Clearly higher education, in both

TABLE 3
Mean Number of Live Births by Education and by Total Duration of Women's Marriages

Level of Education	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5–9	10 and Above	Don't Know	Total
Rural					
None/Less than primary	1.1 (32)	3.4 (61)	6.8 (658)	5.5 (59)	6.2 (810)
Primary	1.1 (236)	2.9 (185)	6.1 (516)	4.4 (14)	4.2 (951)
Secondary or more	1.0 (19)	3.1 (10)	5.3 (17)	* (0)	3.0 (46)
TOTAL	1.1 (287)	3.0 (256)	6.5 (1191)	5.3 (73)	5.1 (1807)
Urban					
None/Less than primary	1.2 (39)	3.2 (56)	5.9 (562)	4.9 (58)	5.4 (715)
Primary	1.1 (233)	2.6 (195)	5.0 (594)	4.3 (30)	3.7 (1052)
Secondary	1.1 (102)	2.4 (76)	4.1 (144)	* (6)	2.7 (328)
High school	1.0 (32)	2.4 (20)	3.1 (28)	* (0)	2.1 (80)
College	1.0 (21)	2.3 (24)	2.3 (28)	* (1)	1.9 (74)
TOTAL	1.1 (427)	2.6 (371)	5.2 (1356)	4.6 (95)	4.0 (2249)

Note: The x^2 values between education and number of live births are significant at 0.001 for both the rural and urban areas.

*Mean not calculated. Number of respondents is less than 10.

relationship was found between age at first marriage and the number of live births for marriages of longer duration, i.e., five to nine years and ten years or more. The partial relationships generally conform to the original one. This confirms the hypothesis that age at first marriage tends to decrease the number of live births.

The combined effect of wives' and husbands' ages at first marriage on women's fertility was also investigated. Data from Table 2 again seem to confirm the hypothesis that couples who were in the youngest age category at first marriage, i.e., less than 20 years, had the highest number of live births, i.e., 6.1 children for rural couples and 5.2 children for urban couples. Conversely, couples in the oldest age category at first marriage, i.e., aged 30 years and above, had the lowest number of live births — 2.7 children for rural couples and 2.2 children for urban couples. The number of live births declines sharply and regularly as age at first marriage increases.

The data in Table 2 also show that in rural areas, the age at first marriage for both husbands and wives had a stronger combined effect on reducing number of live births than the effect of only the wife's age. As mentioned earlier, the wife's age, from the shortest to the longest marriage duration, reduced number of live births by 46 percent. When the wife's and husband's ages at first marriage are combined, the number of live births is reduced by 55 percent. This indicates the additional effect of husband's age at first marriage. In urban areas, the husband's age at first marriage has no additional influence on reducing fertility. When the husband's age at first marriage was considered (Table 2), the reduction in the number of live births from 5.2 to 2.2 was only 58 percent compared with 57 percent (Table 1). This indicates that a woman's age at first marriage had a more negative effect on live births than a man's age at first marriage. There are other data to support this. For example, women who married when they were less than 20 years old and whose husbands' age at first marriage was 20–24 years, had 5.9 live births. However, when the ages were reversed, that is, the women married later (20–24 years old) and the husbands married earlier (under 20 years old), women had fewer live births — only 5.5 children (Table 2).

TABLE 2
Mean Number of Live Births by Wife's and Husband's Ages at First Marriage

Husband's Age at First Marriage	Mean No. of Live Births by Wife's Age at First Marriage				
	Below 20	20–24	25–29	30 and Above	Total
Rural					
Below 20	6.1 (124)	5.5 (32)	4.8 (10)	* (2)	5.9 (168)
20–24	5.9 (382)	5.4 (285)	3.4 (25)	* (7)	5.6 (699)
25–29	5.9 (130)	5.2 (161)	4.4 (49)	2.8 (12)	5.4 (352)
30 and above	5.8 (49)	5.7 (49)	4.2 (26)	2.7 (19)	5.1 (143)
TOTAL	5.9 (685)	5.4 (527)	4.2 (110)	3.6 (40)	5.5 (1362)
Urban					
Below 20	5.2 (226)	5.2 (18)	* (4)	* (3)	5.1 (251)
20–24	5.0 (312)	4.2 (357)	2.7 (28)	* (4)	4.5 (701)
25–29	4.6 (185)	3.7 (259)	3.0 (156)	2.8 (12)	3.8 (612)
30 and above	5.0 (61)	3.7 (105)	2.9 (93)	2.2 (65)	3.4 (324)
TOTAL	5.0 (784)	4.0 (739)	2.9 (281)	2.3 (84)	4.2 (1888)

*Mean not calculated. Number of respondents is less than 10.

about 20.6 years compared to 21.7 years among women who live in Bangkok-Thonburi. This may reflect a whole complex of social and cultural differences. Certainly one factor that plays a role is the tendency among urban dwellers to seek higher education. It may also reflect an attitude within certain sectors of the urban population that marriage should be postponed until one has sufficient financial or professional security, or at least favorable prospects. Whether this is deliberately done or not, the extra years used for work or study prior to marriage and raising a family surely affect fertility.

The data in Table 1 show a steady decline in the number of live births in both rural and urban areas as age at first marriage increases. This decline is quite significant. For example, the difference in the number of live births between the earliest and the latest age of marriage among rural women is 2.7 children or 46 percent (5.9 - 3.2 = 2.7). This declining rate is even faster — 57 percent — in urban areas. This conclusion is supported by a gamma of 0.30 for the urban sample and 0.18 for the rural one. Furthermore, the relationship between these two variables is significant at the 0.001 level for both samples. Among women with the same age at first marriage, a higher number of live births was seen among those in rural areas than those in urban areas. For example, among women who married at age 30 years or later, the rural group had 2.3 live births compared to only 2.1 live births among the urban one.

When the total duration of women's marriages is taken into account, the following findings are revealed. Among women who have been married less than five years, there is no significant difference in the number of live births due to age. For example, both rural and urban women who married before they were 20 years old had a mean live birth of 1.2. The similarity may be due to the fact that women, regardless of their age at first marriage, tend not to avoid pregnancy early on in marriage. However, an inverse

TABLE 1
Mean Number of Live Births by Age at First Marriage and by Total Duration of Women's Marriages

Age at First Marriage	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Rural					
Below 20	1.2 (143)	3.0 (139)	3.8 (646)	6.6 (30)	3.4 (958)
20-24	1.0 (109)	3.1 (87)	6.4 (456)	4.7 (26)	5.0 (678)
25-29	1.0 (25)	2.9 (24)	5.0 (75)	* (2)	3.8 (126)
30 and above	1.2 (13)	* (7)	3.6 (22)	* (3)	2.4 (45)
TOTAL	1.1 (290)	3.0 (257)	6.5 (1199)	5.3 (61)	5.1 (1807)
Urban					
Below 20	1.2 (133)	2.7 (132)	5.8 (624)	5.2 (37)	4.7 (926)
20-24	1.1 (181)	2.7 (141)	5.1 (533)	4.0 (35)	3.9 (890)
25-29	1.1 (89)	2.5 (74)	3.8 (155)	* (7)	2.7 (325)
30 and above	1.0 (25)	2.3 (24)	2.6 (46)	* (2)	2.1 (97)
TOTAL	1.1 (428)	2.6 (371)	5.2 (1358)	4.5 (81)	4.0 (2238)

Note: The x^2 values between age at first marriage and number of live births are significant at 0.001 for both the rural and urban areas.

*Mean not calculated. Number of respondents is less than 10.

children (variables 30 and 31), attitude towards old age security (variable 32), desired family size (variable 33), and finally, contraceptive practice (variable 34).

Two types of analysis were used in the study, namely, descriptive and regression. The descriptive analysis was based on a series of tables of the mean number of live births by the independent variables, using total duration of women's marriages as the control variable. The crossbreak technique was used to provide the mean number of children. The cross-tabulation technique was also used to estimate the gamma and chi-square statistics which were then used as evidence of the strength and significance of the relationship between independent variables and number of live births.

To be included in the regression analysis, an independent variable had to be significantly related to the dependent variable (gamma = 0.15). The zero-order correlations among these independent variables and live births were then scrutinized. The regression technique had three uses: to assess the total effect of the selected variables on live births, to compare the importance of the effect on each variable, and to compare the effect of the same variable while controlling for the duration of marriage. Several hypotheses were postulated and tested. These are listed below.

1. Women or couples with certain background characteristics, i.e., younger, married later, have a shorter duration of marriage, have fewer live births than women who are older, married earlier, and have a longer duration of marriage.
2. Women with more infant deaths have more live births than those with less infant deaths.
3. Women who worked for wages before and/or after marriage have fewer live births than those who never worked or worked without a wage.
4. Women with more modern values, attitudes, and practices, i.e., want to deliver their babies or usually deliver babies at modern facilities, know more about contraceptive methods, have positive attitudes toward family planning, are exposed to mass media more often, have fewer live births than those with traditional values, attitudes, and practices.
5. Women or couples who are in favor of small families, i.e., two children, or not in favor of large families, i.e., five or more children, or generally desire fewer children, have fewer live births than those who are not in favor of small families or are in favor of large families or who desire a larger number of children.
6. Women who want to depend on their children in their old age have more live births than women who do not want to depend on their children.
7. Women who have practiced or are practicing family planning have more live births than those who have never practiced it at all.

A DESCRIPTION OF THE RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC AND ECONOMIC VARIABLES AND FERTILITY

This section describes the relationship between ten independent variables and fertility.[1] The independent variables are: age at first marriage, education, infant mortality, woman's work experience, attitude towards family planning, circumstances of childbirth, mass media exposure, attitude towards family size, desire to depend on children in old age, and practice of contraception.

Age at First Marriage and Fertility

It is generally known that men and women in the cities marry later than those in rural areas. This is also true for Thailand. The average age at first marriage of rural women is

[1]Only the variables found to be significantly related to fertility are presented in this report. Table 24 lists all the variables, including those which were not significantly related to fertility and not presented in the descriptive analysis.

SOCIO-DEMOGRAPHIC AND ECONOMIC FACTORS AFFECTING FERTILITY IN RURAL AND URBAN THAILAND

Pichit Pitaktepsombati

OBJECTIVES, ANALYTICAL FRAMEWORK, AND DATA SOURCES

The general purpose of this study was to assess the nature and magnitude of the relationship between women's fertility and social, demographic, and economic factors, in both rural and urban areas of Thailand. Specifically, the study sought to accomplish the following:

1. To evaluate the nature and magnitude of fertility differentials from the 1972 and 1973 Longitudinal Studies, Round Two; and
2. To assess the effects of a broad range of social, demographic, and economic variables on fertility using multivariate analysis.

The analytical framework underlying this analysis posited fertility as a function of background characteristics, infant mortality, women's labor force participation, modernity, occupational mobility, attitude towards old age security, attitude towards specific number of children, desired family size, and contraceptive practices.

Moreover, it was expected that the above factors are differentially related to fertility in rural and urban areas owing to the differences in social, economic, and cultural systems between these two areas. Previous studies in most countries, including Thailand, have found that these factors operate differently in rural and urban areas. However, it should be borne in mind that the difference in the number of live births between rural and urban areas in Thailand may not be as great as one would expect to find in a developed society. This is because the majority of Thais still live in rural areas. Also, the rural way of life still exists in urban areas of Thailand as a result of the influx of rural migrants into these areas, even while the urban way of life has begun to gradually diffuse to rural areas.

The present study was based on data collected from the Longitudinal Studies of Social, Economic, and Demographic Change in Thailand, Round Two, conducted in April-May of 1972 and 1973. The rural and urban samples of these studies are national level samples. The rural sample consisted of about 1,448 households. Approximately 2,153 females and males were interviewed directly or indirectly, i.e., some information had to be obtained from other persons. For the urban sample, about 1,585 households were selected, and about 3,153 females and males were interviewed.

VARIABLES INVESTIGATED, ANALYSIS TECHNIQUES, AND HYPOTHESES

In the present study, the dependent variable, fertility, was operationally defined as the number of live births. One control variable — total duration of women's marriages — was also used. The independent variables consisted of nine major factors. These were socio-demographic and economic backgrounds (variables 1 to 13), infant mortality (variable 14), women's labor force participation (variables 15 and 16), occupational mobility (variable 17), modernity (variable 18), attitude towards specific number of

The pattern illustrated above, which conforms with the acculturation hypothesis, does not seem to be the predominant one. Out of the possible 12 comparisons, six cells have means which are either lower or bigger than the means at both non-mobile statuses, and in one case the mean is the same as the mean at destination. This lends support to the hypothesis that social mobility has a unique effect on reproductive behavior.

FERTILITY DIFFERENCES BY EXTENT OF MOBILITY

The summary tables above do not allow for the analysis of the potential effects of the extent of social mobility on reproductive behavior. Table 15 has been constructed to examine the probable effects of the degree of mobility. Here the upwardly and downwardly mobile individuals were classified into those who had shifted two or more statuses from their social origins and those who had shifted but one level.

TABLE 15
Actual and Expected Mean Number of Children Ever Born (CEB) by Different Groups of Women, Type of Mobility and Degree of Mobility

Groups of Women & Type & Degree of Mobility	Mean CEB		No. of Cases	Difference (1) − (2)
	Actual (1)	Expected (2)		
Husband's Father's Occupation to Husband's Occupation in 1973				
Very upwardly mobile	5.48	5.47	138,361	0.01
Moderately upwardly mobile	6.02	5.92	338,964	0.10*
Moderately downwardly mobile	6.41	6.29	118,538	0.12*
Very downwardly mobile	6.43	6.14	40,834	0.29*
Woman's Father's Occupation to Husband's Occupation in 1973				
Very upwardly mobile	5.60	5.55	160,562	0.05*
Moderately upwardly mobile	6.00	6.06	400,810	−0.06
Moderately downwardly mobile	5.97	6.02	109,420	−0.05
Very downwardly mobile	5.78	5.52	55,899	0.26

*Differences between actual and expected means all significant at $p \leq .005$.

Most notable of the results in the table pertains to the pattern of the means among the very downwardly mobile couples. In all cases, the actual means in this group were consistently and significantly greater than the expected means. Likewise, the actual means were generally and significantly higher than the expected means among the moderately upwardly mobile and the very upwardly mobile. In sum, the additive model failed to account for the variations observed in the mean number of children ever born among mobile couples by extent or distance of movement.

Social mobility had the effect of depressing fertility in both directions of movement, both the upwardly and the downwardly mobile couples exhibited less fertility than the non-mobile ones.

TABLE 14
Expected Mean Number of Children Ever Born (CEB) per Currently Married Women by Social Origin and Present Social Class Calculated from the Additive Model, and Deviations of Actual from Expected CEB

	Present Social Class			
	High White-collar (1)	Low White-collar (2)	Blue-collar (3)	Farm (4)
Social Origin (Husband's)				
High white-collar	4.94	5.51	5.80	6.28
Low white-collar	5.23	5.80	6.09	6.57
Blue-collar	5.22	5.79	6.08	6.56
Farm	5.10	5.67	5.96	6.44
Actual Means Minus Expected Means*				
High white-collar	0.05	0.28	−0.18	−0.26
Low white-collar	−0.28		−0.43	1.29
Blue-collar	0.07	0.09	−0.12	0.33
Farm		−0.01	0.14	−0.03

*Calculated from Table 12 and first panel of this table.

CHART C

	Mean		
Type of Mobility	Actual (1)	Expected (2)	Difference (1) − (2)
Upward	5.86	5.79	0.07*
Non-mobile	6.32	6.36	−0.05*
Downward	6.42	6.26	0.16*

*Differences between actual and expected means all significant at $p < .0005$.

deviations between the means by type of mobility have been found to be statistically significant. Additionally, a two-analysis of variance was calculated for number of children ever born, as the criterion variable, with social origin and present social class as the predictors. The F-test indicated statistically significant interaction between the two predictors, $p = .038$. In the light of these evidences, we can reject the additive assumption and accept the social mobility-fertility hypothesis as having been supported.

Now, some word on the applicability of the acculturation hypothesis to the data at hand. According to this hypothesis, the fertility of the mobile individuals is expected to be intermediate between that of the two non-mobile groups (origin and destination). The means in Table 12 will be looked at again in order to compare the fertility of mobile individuals with that of the non-mobile ones at class origin and destination, respectively. For example, we find the downwardly mobile from a high white-collar position to a blue-collar position to have a mean fertility of 5.62. This is higher than the mean number of children ever born among non-mobile mothers at origin (high white-collar) and lower than the average family size among non-mobile wives at destination (blue-collar). Similar triangular comparisons can be made for the upwardly mobile and downwardly mobile.

The net effects of the two bases for cross-classification, class origin and present class, are estimated by a_i and b_i respectively. The expected or predicted mean fertility (EMF) for each combination of former class and present class can be derived according to the following formula:

$$(EMF)_{ij} = \overline{Y} + a_i + b_j \quad (2)$$

Where $\overline{Y}$, a_i, and b_j are as defined above.

RESULTS FROM THE ADDITIVE MODEL

The solution to the additive multiple classification analysis are shown in Chart B. The net effects of social origin are shown in Column 1 and the net effects of the present social class are shown in Column 2. Using Formula 2 described above, together with the grand mean of 6.23 children (see Table 12) these coefficients give the expected number of

CHART B

	Net Effects	
Social Class	Social Origin (1)	Present Social Class (2)
High white-collar	−0.18	−1.11
Low white-collar	0.11	−0.54
Blue-collar	0.10	−0.25
Farm	−0.02	0.25

children ever born per woman by social origin and present social class. For example, for an upwardly mobile couple originating from a blue-collar status and presently occupying a high white-collar position, the expected mean number of children ever born is calculated as follows: 6.25 + (0.10) + (−1.11) = 5.22 children. The results are found in Table 14, Column 1. The deviations in Column 2 of the table were derived by subtracting the expected means from the actual means in Table 12. These deviations (both magnitude and direction) form the bases for determining the fit of the data to the additive model. If the deviations are zero, it would signify that the additive model is adequate in explaining fertility variations by type of mobility. This would mean that mobility does not have any effect and that the manifest fertility differentials would be due to combined effects of social origin and destination. The signs are positive where the actual means exceed the expected ones, and the signs are negative where the actual means fall below the expected means.

The data does not seem to fit the additive model as the deviations are non-zeros (except in two cells where the actual means equalled the expected means) and sometimes, substantial. The deviations for the upwardly mobile and the downwardly mobile do not present any evidence to the effect that the additive model generally overestimates or underestimates the mean fertility in both mobile groups. At least on this basis alone, the deviations are fairly consistent. There is some danger in examining these deviations further as some of them are based on relatively limited cases (9 to 20 unweighted cases), particularly three of the biggest deviations (see underscored values). The overall picture is summarized in Chart C by reclassifying the women according to type of mobility. Column 2 produces the reduced form of Table 14, derived by multiplying the means by the corresponding number of cases in Table 11 by type of mobility, summing them up, and then dividing the sum by the total number of cases in the group.

The above weighted means allow for testing the degree of difference between the actual and expected means, and, following Treiman (1966), tests were employed. All the

Table 13 shows that within each class, the downwardly mobile had the largest family size. Within each type of mobility, the uppermost occupational group displayed the smallest number of children. Under these circumstances, one is tempted to make the observation that the data in Table 13 support the acculturation hypothesis. This is entirely out of the question, however, as the specific destinations of both the upwardly mobile and the downwardly mobile are not revealed by the data. Analysis of the hypothesis would require the comparison of the mean fertility of the mobile couples with that of the non-mobile couples in both statuses, origin and destination. The application of the acculturation hypothesis is discussed later.

The apparent effects of social class can be deduced by looking at the means among non-mobile couples by social class (diagonals of Table 12) which evince a monotonic relationship. Differences in fertility are also noted when wives are classified by either social origin or by destination. On the basis of the data, we can also assume that mobility *per se*, does not have any effect on fertility, and that variations in fertility among mobile couples are brought about by the simultaneous effects of the social origin and the present status. In other words, it is assumed that family size for any combination of past and present occupational classes is a weighted average of the additive effects of the two statuses (see Boyd 1973; Blau and Duncan 1967). This serves as the benchmark for the present analysis. The additive multiple classification analysis (MCA) was employed to test for the effects of mobility on number of children ever born.

TABLE 13
Mean Number of Children Ever Born for Currently Married Woman by Type of Mobility and Class Origin

Husband's Social Origin	Type of Mobility		
	Upward	Non-mobile	Downward
High white-collar	*	4.99	5.75
Low white-collar	4.95	5.80	6.31
Blue-collar	5.53	5.96	6.41
Farm	5.93	6.41	*

*Movement not possible.

The additive multiple classification model is represented by the following equation (see Duncan 1966; Andrews et al. 1973):

$$\bar{Y}_{ij} = \bar{Y} + a_i + b_j + e_{ij} \quad (1)$$

Where

$\bar{Y}_{ij}$ = the observed mean fertility in the combination of former class i and present class j

$\bar{Y}$ = the grand mean for the total sample

a_i = the effect on the wife's fertility due to the husband's membership in the ith origin class

b_j = the effect on the wife's fertility due to her husband's membership in the jth destination class

e_{ij} = the deviation of the observed from the expected average number of children ever born on the basis of the additive effects of row and column categories.

TABLE 11
Number of Currently Married Couples Classified by Social Origin and Present Social Class, 1973*

Husband's Social Origin	Present Social Class: High White-collar (1)	Low White-collar (2)	Blue-collar (3)	Farm (4)	Total
High white-collar	26,562	15,858	19,822	7,533	69,775
Low white-collar	12,686	52,331	31,716	13,479	110,212
Blue-collar	22,598	32,112	167,302	70,964	292,976
Farm	30,130	85,633	294,165	1,338,016	1,747,944
TOTAL	91,976	185,934	513,005	1,429,992	2,220,907

*To get meaningful tests of significance for the difference between actual and expected means in the following tables (numbered and unnumbered), the number of cases was scaled down to the unweighted number but with a resultant distribution that was the same as the weighted one.

The mean number of children ever born per woman by social origin of the husband and present social class is displayed in Table 12. A look at the marginal means shows the montonic relationship between social class and fertility. The same observation is made when the means on the diagonal are examined. Without exception, cumulative fertility decreases with rising status. When the other cells are scrutinized, one discovers differences in mean number of children ever born from cell to cell. Apparently, not all of the observed variations are due to sampling fluctuations. The data then suggest some kind of relationship between mobility and fertility. Some summaries are attempted below before making any conclusions.

Controlling for social origin enables one to cope with the varying chances of the different social groups for mobility — the higher the social class the less likelihood for upward mobility and the lower the social class the less probability of downward mobility.

TABLE 12
Mean Number of Children Ever Born per Currently Married Woman by Social Origin and Present Social Class

Husband's Social Origin	Present Social Class: High White-Collar (1)	Low White-Collar (2)	Blue-Collar (3)	Farm (4)	All Classes (5)
High white-collar	4.99	5.79	5.62	6.02	5.46
Low white-collar	4.95	5.80	5.66	7.86	5.91
Blue-collar	5.29	5.70	5.96	6.89	6.11
Farm	5.10	5.66	6.10	6.41	6.31
ALL ORIGINS	5.10	5.72	6.01	6.45	6.23

ranged from 64 to 77 percent. Regardless of time reference, the propensity to remain in one's former position was directly related to status rank — the higher the stratum was in the status hierarchy the greater the proclivity to stay, and the lower the occupational status the less the tendency to remain. However, this does not mean that the higher ranking strata (professional and clerical occupations) have been closed to external recruits; on the contrary, these two occupational groups have been the most open destination classes for the upwardly mobile sons.

Overall upward mobility as shown by the descriptive analysis exceeded downward mobility with the probability of upward movement increasing monotonically with a reduction in rank. This is confirmed by the perfect mobility model. Sons of manual backgrounds demonstrated the most success in crossing the manual-non-manual boundary, particularly the sons of sports and service workers. Mobility of these sons exceeded theoretical expectations with the reverse applying to the lower occupations.

Regarding downward mobility, the data on intragenerational flows showed the presence of a braking effect that tended to cushion the fall of those in the upper strata, with the result that the probability of remaining in the white-collar statuses was heightened.

Irrespective of the direction of movement, a prominent pattern is the tendency for change to occur between adjacent or closely related occupational strata. This phenomenon is revealed by both methods of analysis. High proportions, under the descriptive analysis, and mobility ratios above unity, under the perfect mobility model, tend to cluster around the occupational origin. Although movement has been mainly short-distance, the data point to long distances negotiated by some of the mobile individuals. For example, the supply of sons from the intermediate levels to the white-collar occupations exceeded expectation; similarly, actual recruitment from the white-collar occupations into the middle occupations surpassed what was expected, though to a relatively lesser degree. It appears that clerical jobs exerted superior appeal to the upwardly mobile individuals than did the other white-collar strata. The reasons for this could be the greater rewards in terms of income and prestige of the clerical jobs than the sales jobs, and the difficulty of meeting the qualifications required by the professional, technical, and managerial jobs.

FERTILITY AND SOCIAL MOBILITY

Past investigations of the possible effects of mobility on social behavior and fertility have failed to strongly support the presence of independent effects of social mobility. Variations in the dependent variables among mobile individuals were found to better fit the additive assumption, meaning differences were mainly due to the combined effects of former and present statuses, although Blau and Duncan (1967) have reservations about the adequacy of the additive model to account for the variations in fertility which they observed in their U.S. data. Such studies have lent support to the acculturation hypothesis which states that the position of the mobile person will lie between that of the two non-mobile groups at origin and at destination. This situation may have arisen from the fact that such studies have utilized data from the more developed countries.

A PRELIMINARY LOOK AT THE DATA

Table 11 gives the cross-tabulation of currently married couples by social origin of the husband and present social class. Non-mobile couples constituted 71 percent of all the sample cases. The rest were the couples whose social origins differed from that of their present social class, the upwardly mobile (below the diagonal) outnumbering the downwardly mobile as evident from gains via mobility registered by the white-collar and blue-collar groups and from the concomitant losses among the farming group.

TABLE 9
Mobility from Occupation in 1965 to Occupation in 1973 for Married Males 25 to 64 Years Old: Inflow Percentages

	Occupation in 1975	Occupation in 1973								
		1	2	3	4	5	6	7	8	All 8
1	Professionals, etc.	76.9	4.1	5.9	1.1	0.5	0.6	0.3	0.0	4.8
2	Clerical Workers	9.4	78.3	1.4	1.0	0.4	1.0	0.4	0.1	3.0
3	Sales Workers	3.9	1.7	69.3	1.7	1.1	1.8	0.5	1.3	5.0
4	Transportation & Communication Workers	2.9	1.9	1.6	78.1	2.1	3.5	0.6	0.8	6.4
5	Craftsmen, etc.	2.6	1.5	3.9	4.0	78.6	4.1	0.9	2.2	11.2
6	Sports & Service Workers, etc.	1.3	3.3	2.6	4.3	4.4	75.5	1.2	2.7	7.3
7	Farmers, etc.	2.4	8.8	10.3	7.3	9.6	9.8	93.1	12.5	48.8
8	Farm Workers, etc.	0.6	0.4	5.0	2.5	3.3	3.7	3.0	80.4	13.5
TOTAL		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

TABLE 10
Inheritance and Out-Mobility Ratios for Status Categories Held in 1965 and 1973

	Status Category	Inheritance Ratio (1)	Out-Mobility Ratio		
			Total (2)	Higher (3)	Lower (4)
1	Professionals, etc.	16.078	0.204	—	—
2	Clerical Workers	25.953	0.332	3.127	0.175
3	Sales Workers	13.885	0.215	0.631	0.178
4	Transportation & Communication Workers	12.260	0.198	0.334	0.175
5	Craftsmen, etc.	7.008	0.171	0.293	0.135
6	Sports & Service Workers, etc.	10.352	0.301	0.478	0.207
7	Farmers, etc.	1.906	0.193	0.171	0.256
8	Farm Workers, etc.	5.962	0.218	—	—

classified higher, the indices are in a decreasing order down the scale, those from the service occupations excepted. For those placed lower, the indices generally follow an increasing trend. These trends suggest that those men who occupied higher occupations, if ever they experienced changes in occupation, were more likely to achieve a position higher than the previous one, while those who occupied lower status occupations were more likely to fall further down the scale. It would seem that advancement or retrogression in social position is related to the earlier placement of the individual relative to the status hierarchy.

Judging from the intergenerational flows of manpower, the Philippines can be said to be gradually evolving from a rigid occupational structure. Inheritance rates by specific occupations have been less than the total mobility rates (upward and downward), with the exception of the agricultural occupations in the rural areas where the inheritance rates

As shown in Table 8 (row percentages), farmers, craftsmen, professionals were more likely to remain in their positions. Clerical workers had the greatest propensity to change their jobs and when they did, the chance of achieving a higher position was the same as getting a lower one. In the case of mobile sales workers, transportation and communication workers, and craftsmen, the likelihood of a downward movement was greater than upward movement. For men who held upper-farm jobs as of 1965, the chance of gaining a higher rank was indeed very difficult. On the other hand, the upper-farm occupational rank served as the terminal destination of manpower from other occupational groups.

TABLE 8
Mobility from Occupation in 1965 to Occupation in 1973 for Married Males 25 to 64 Years Old: Outflow Percentages

Occupation in 1965	Occupation in 1973								
	1	2	3	4	5	6	7	8	Total
1 Professionals, etc.	83.4	2.2	7.1	1.6	1.3	1.1	3.3	0.0	100.0
2 Clerical Workers	16.2	67.6	2.9	2.2	1.5	2.2	6.8	0.6	100.0
3 Sales Workers	4.0	0.8	79.7	2.3	2.7	2.5	4.4	3.6	100.0
4 Transportation & Communication Workers	2.3	0.8	1.4	81.5	4.1	3.8	4.5	1.6	100.0
5 Craftsmen, etc.	1.2	0.3	2.0	2.4	85.0	2.5	3.9	2.7	100.0
6 Sports & Service Workers, etc.	0.9	1.2	2.0	3.9	7.4	72.0	7.6	5.0	100.0
7 Farmers, etc.	0.2	0.5	1.2	1.0	2.4	1.4	89.8	3.5	100.0
8 Farm Workers, etc.	0.3	0.1	2.1	1.2	3.0	1.9	10.3	81.1	100.0
ALL CATEGORIES	5.2	2.6	5.8	6.7	12.1	7.0	47.1	13.6	

Table 9 attests to the very high degree of self-recruitment in the upper-farm stratum. Of all men who were in this stratum as of 1973, ninety-three percent had originally been there. The topmost stratum drew its external recruits mostly from the lower white-collar positions (groups 2 and 3) and from the upper blue-collar positions (groups 4 and 5). The sales group, which had the lowest self-recruitment rate, recruited the least from both of the next higher and next lower strata. Ignoring the first occupational stratum, there is a noticeable absence of concentrated external recruitments from proximal groups. Interestingly, external recruitment involved mobile persons of widely dispersed origins.

The inheritance and out-mobility ratios calculated under the model of perfect mobility are displayed in Table 10. The inheritance ratio, besides being a measure of stability or immobility as stated earlier, can be used as a measure of association between social origin and present social class (Glass, 1954). The inheritance ratios (Column 1) show that the highest intensity of association between previous status and current status was found among the upper occupational groups. As in intergenerational mobility, the sons of farmers achieved the least inheritance ratio which implies a high level of mobility relative to the other occupational classes. In all the class categories, mobility has been very much less than would be expected under the conditions of perfect mobility as shown by the total out-mobility ratios, although the values varied greatly.

In Columns 3 and 4, the out-mobility ratios, calculated taking into consideration the subject's position in the scale as higher or lower than that of their earlier positions, were observed to form a distinct order in the occupational scale. For the subjects who were

TABLE 7
Summary Measures Derived from the Mobility Ratios (Table 8) Classified by Occupational Categories

Occupational Category	Average In-Mobility (1)	Average Out-Mobility (2)	Out-Mobility ÷ In-Mobility ((2) ÷ (1)) (3)	Stability or Inheritance (4)	Stability ÷ In-Mobility ((4) ÷ (1)) (5)	Stability ÷ Out-Mobility ((4) ÷ (2)) (6)
1 Professionals, etc.	1.74	1.38	0.79	6.85	3.94	4.96
2 Clerical Workers	1.64	1.71	1.04	5.79	3.53	2.95
3 Sales Workers	1.28	1.06	0.83	6.75	5.27	6.37
4 Transportation & Communication Workers	1.43	1.38	0.96	5.02	3.5	3.64
5 Craftsmen, etc.	1.14	1.06	0.93	3.42	3.0	3.23
6 Sports & Service, etc.	1.42	1.39	0.98	3.27	2.30	2.35
7 Farmers, etc.	0.23	0.64	2.78	1.40	6.09	1.87
8 Farm Workers, etc.	0.48	0.57	1.19	4.63	11.02	8.12
ALL CATEGORIES	1.16	1.19	1.02	3.64		

the upper-farm sons demonstrated the highest mobility of all strata. An inspection of the entire profile on the basis of the inheritance ratios reveals that the upper-farming occupations formed a trough.

Table 7 contains summary indices derived from the mobility ratios in Table 6. Overall mobility (both in-mobility and out-mobility) was one and one-fifth times higher than expected. Overall stability was almost five times higher than expectation.

An examination of the average in-mobility ratios (Column 1) discloses a moderately high extent of entry into the professional and clerical jobs. The ratios suggest that the two highest occupational classes were the most open to sons from other origins. Lower in-mobility values were exhibited by the sales (1.28), transportation and communication (1.43), craftsmen (1.14), and sports and service (1.42) groups. Of the intermediate occupations, the skilled occupations appeared the least accessible. Recruiting their members mostly from within, the farm occupations showed very low in-mobility ratios. The difficulty of getting out of the farm occupations is manifested by equally low average out-mobility values. True to what has been noted earlier in the descriptive analysis, the sons of clerical workers were the most mobile, the occupational group registering the highest average out-mobility value (1.7). Relative to ease in moving out of origin, the sons of professionals and managers, transportation and communication workers, and sports and service workers, who enjoyed the same opportunities, followed the clerical workers' sons.

An attempt is made in Column 3 to indicate the reciprocity of occupations to one another by comparing the movement in one direction relative to that in the other. According to this criterion, three clusters of occupations can be identified. The farm occupations had ratios significantly greater than unity which signifies that sons were more likely to leave these occupations than other sons to enter them. The propensity to move into or out of the second and last occupational strata was almost the same, with outward movement slightly favored. For the remaining occupations, average in-mobility exceeded the average out-mobility. Although most of the ratios are not significantly lower than unity, there is an indication of a trend towards a relative openness of these strata, particularly the highest ranking category.

The group composed of sports, service and related workers displayed the least tendency to recruit members from within the rank relative to recruitment from other ranks (see Column 5, Table 7). This means that it was easier for sons from other origins to enter these occupations than sons from the same origin. The reverse is true for the farm occupations, which is understandable, as well as the sales occupations.

The high out-mobility among sons of farmers relative to immobility is very apparent from Column 6. This is in direct contrast to the sons from the third and last ranking occupations, whose likelihood of entering their fathers' classes was greater than that of entering other social classes. Comparatively moderate inclinations to inherit their fathers' social statuses relative to leaving it were noted for sons of sports and service and clerical workers. Columns 5 and 6, taken simultaneously, demonstrate that the sales rank as well as the farm labor and others rank was relatively closed while the clerical and sports and service groups were open. The other strata were interspersed between these two extremes.

PATTERNS OF INTRAGENERATIONAL FLOWS

During the period 1965–1973, occupational changes involved some 750,000 men, representing 15.2 percent of the total sample. About nine percent of the total sample experienced upward mobility, while about seven percent suffered a demotion in occupational rank.

TABLE 6
Mobility Ratios Indicating Mobility of Married Males 25 to 64 Years Old from Father's Occupation to Occupation in 1973 on the Assumption of Independence

Father's occupation at Age 40	Respondent's Occupation in 1973								
	1	2	3	4	5	6	7	8	All 8
1 Professionals, Executives, & Related Workers	6.85	3.70	2.21	1.22	0.68	1.39	0.39	0.24	1.38
2 Clerical Workers	4.36	5.79	1.16	2.53	1.03	2.61	2.61	0.14	1.71
3 Sales Workers	2.36	1.16	6.73	0.98	1.16	1.16	0.13	0.39	1.06
4 Transportation & Communication Workers	1.84	2.22	1.73	5.02	2.23	1.33	0.15	0.15	1.38
5 Craftsmen, etc.	1.00	1.07	0.99	2.22	3.42	1.06	0.29	0.77	1.06
6 Sports & Service, etc.	1.82	2.08	1.69	1.70	1.47	3.27	0.30	0.70	1.39
7 Farmers, etc.	0.55	0.69	0.53	0.70	0.71	0.79	1.40	0.52	0.64
8 Farm Workers, etc.	0.26	0.58	0.62	0.68	0.70	0.81	0.32	4.63	0.57
ALL CATEGORIES	1.74	1.64	1.28	1.43	1.14	1.31	0.23	0.48	

topmost ranking occupational groups, although the amount of flows between clerical and sales workers was minimal (supply of manpower to each other was almost equal to expectation).

Examined horizontally, the mobility ratios indicate that the intermediate or blue-collar occupations serve as a repository of downwardly mobile members of the labor force. Also, the sons of service workers were more likely to be upwardly mobile than any of those from other occupational groups. While the sons of farmers experienced a relatively high degree of mobility, their penetration into the higher occupational levels is much below what would be expected, indicating that the higher occupational levels, particularly the white-collar ones, were not easily accessible to them. In contrast, the white-collar positions were more readily accessible to sons of relatively proximal beginnings.

A closer look at Table 6 reveals some interesting patterns. The inheritance ratios (diagonal values) decrease nearly monotonically as one goes down the occupational hierarchy. Expressive of higher self-recruitment, the ratios in the upper ranks are larger than those in the lower ranks. Manifesting a greater intensity of social inheritance than the other lower-ranked workers, the farm workers digressed from this pattern. Generally, recruits for the upper ranks primarily came from the adjacent occupational groups. The ratios for the farm occupations show that they fell short of their quota of supply to all other occupations except their own. One likely reason for such a disadvantage among the individuals of farm origins may be the lack of training for occupations other than agricultural ones.

The relative changes in class positions between parents and sons, as measured in Table 6, are quite different from those suggested by Table 4. In the latter table, upper-farm occupations manifested the highest degree of self-recruitment. Apparently, this was largely due to the dominant shares of this occupational class in both generations. While the descriptive analysis shows that, with reference to the whole occupational structure, farmers had the highest inheritance ratio, the perfect mobility model brings to light the important fact that, as compared with the other categories, mobility in this category was the highest of all. The mobility ratio (1.4, see diagonal of Table 6) shows the smallest excess over the expected, an indication that relative to remaining in one's original status,

The lower-ranking occupational groups demonstrated the less amount of downward mobility in relative terms. The distance traversed when such changes in social class occurred is not very substantial as shown in Table 5. The means in this table were computed assuming an equal distance between occupational groups and an interval of one. A look at Column 2 reveals that the outflow means for the intermediate occupations (groups 3-5) fell in the diagonals, an indication of social inheritance. The diverse origins of the labor force belonging to the non-manual occupations is evident from Column 1 where sizeable numbers of workers were able to cross the manual-non-manual demarcation. Of the white collar-classes, the clerical occupations appeared to be the most accessible to the manual workers as well as the farmers.

In the following section, the same data are analyzed utilizing an alternative approach — the use of the perfect mobility model. The advantage of the technique is its ability to control for the changes in the relative sizes of the various occupational categories between the parental and filial generations (Rogoff 1951; Rogoff 1953: 30-31; Glass and Hall 1954: 303; de Jong, Brawer and Robin 1971: 1035).

Perfect Mobility Model

The relationship between occupational origin and destination can also be viewed by comparing observed mobility with expected mobility. This can be done by computing ratios based on the "perfect" mobility model which assumes statistical independence of origins and destinations. Under the condition of perfect mobility each destination stratum has the same distribution of origins as the total sample and each origin stratum has the same distribution of destinations as the total sample, i.e., all the ratios are equal to 1.0. These mobility ratios serve as the baseline for comparison as departures from perfect mobility are reflected in the mobility ratios.

The mobility ratios calculated under the perfect mobility model are presented in Table 6. That occupational inheritance was greater than expected is evident from the high values in the diagonal. Out of 56 cells off the diagonal, 26 cells have ratios greater than one. This is an indication that social mobility has taken place, with upward mobility occurring more often than downward mobility. In absolute terms, there were twice as many upwardly mobile men as downwardly mobile men. Under the same assumption of equal distances between occupational strata and a class interval of one, the spread of underlined ratios indicates that occupational movements were predominantly short distance. The presence of a few underlined ratios near the upper right-hand corner and near the lower left-hand corner signifies that some long distance movements have occurred. The ratios tend to show a greater extent of exchanges of flows among the three

TABLE 5
Mean Rank of Occupational Destination and Origin by Occupational Stratum

	Occupational Category	Mean Origin (1)	Mean Destination (2)
1	Professionals, etc.	4.44	3.29
2	Clerical Workers	5.26	3.72
3	Sales Workers	4.98	3.90
4	Transportation & Communication Workers	5.75	4.23
5	Craftsmen, etc.	5.95	5.11
6	Sports & Service, etc.	6.02	4.93
7	Farmers, etc.	6.88	6.25
8	Farm Workers, etc.	7.26	6.94

TABLE 4
Mobility from Father's Occupation to Respondent's Occupation in 1973 for Married Males 25 to 64 Years Old: Inflow Percentages

Father's Occupation at Age 40	Respondent's Occupation in 1973								
	1	2	3	4	5	6	7	8	All 8
1 Professionals, Executives, & Related Workers	25.8	14.0	8.3	4.6	2.6	5.2	0.9	0.9	3.8
2 Clerical Workers	5.6	7.4	1.5	3.2	1.2	3.3	0.2	0.2	1.2
3 Sales Workers	10.3	5.1	29.5	4.3	5.1	5.1	0.8	1.7	4.4
4 Transportation & Communication Workers	3.9	2.6	3.6	10.5	4.7	2.8	0.3	0.3	2.1
5 Craftsmen, etc.	7.3	7.8	7.2	16.1	24.9	7.7	2.1	5.6	7.3
6 Sports and Service, etc.	8.6	9.8	8.0	8.1	7.0	15.5	1.4	3.3	4.7
7 Farmers, etc.	35.4	44.5	34.5	45.2	46.2	50.9	90.5	33.4	64.7
8 Farm Workers, etc.	3.1	6.8	7.4	8.0	8.3	9.5	3.8	54.6	11.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Fewer sons of clerical workers became clerical workers themselves than professionals or service workers.

The array of inflow percentages in Table 4 shows what proportion of the sons in each occupation was recruited from the different occupational origins. Although derived from data already reviewed, this table gives a somewhat different perspective on the relative chance of upward mobility among sons coming from low-ranking occupations. Each higher occupational group has recruited from 34 to 51 percent of its members from sons of farmers. This is to be expected because of the predominance of agricultural workers in the labor force. Clerical occupations, which had the greatest outflow of sons, had also the lowest rate of self-recruitment. It recruited more than 92 percent of their number from other occupational strata. It was followed by the transport and communication occupations with 89 percent.

Chart A shows the percentage of sons whose category was higher or lower than that of their fathers. Apparently, the tendency to rise is more marked among sons whose parents were in the lower status occupations (excluding groups 1 and 9 where movement in only one direction is possible). Taking the extreme case, in relative terms three times as many farmers' sons as sales workers' sons experienced an upward movement. In comparison the propensity to move down the social hierarchy is directly related to occupational level.

CHART A

Status Category	Son's Category in Relation to Father's Category	
	Higher	Lower
1 Professionals, etc.	—	—
2 Clerical Workers	27.9	72.1
3 Sales Workers	27.4	62.6
4 Transportation, etc.	36.5	63.5
5 Craftsmen, etc.	45.7	54.3
6 Sports & Service, etc.	69.5	30.5
7 Farmers, etc.	79.8	20.2
8 Farm Workers, etc.	—	—

TABLE 2
Frequency and Percentage Distribution of Respondents by Father's Occupation at Age 40 and Own Occupation in 1973

Occupational Category	Father's Occupation at Age 40		Respondent's Occupation in 1973	
	No.	%	No.	%
1 Professionals, Executives, & Related Workers	148,898	3.8	217,041	5.5
2 Clerical Workers	50,401	1.2	96,083	2.4
3 Sales Workers	172,702	4.4	248,306	6.3
4 Transportation & Communication Workers	82,900	2.1	217,439	5.5
5 Craftsmen & Production Process Workers	287,103	7.3	483,531	12.3
6 Service & Sports Workers, Miners, & Quarrymen	186,725	4.7	284,855	7.2
7 Farmers & Farm Managers	2,552,093	64.7	1,890,877	47.9
8 Farm Workers, Fishermen, Hunters, Loggers, & Related Workers	465,111	11.8	507,801	12.9
TOTAL	3,945,933	100.0	3,945,933	100.0

The percentages in Table 3 demonstrate the outflow of sons from a common occupational origin to various occupational destinations. Except for clerical workers, the percentages are largest in the diagonal, an indication of a tendency toward self-recruitment and occupational inheritance. The "holding power" of farm origins was the greatest, while that of the transportation and service occupations was considerably less.

TABLE 3
Mobility from Father's Occupation to Respondent's Occupation in 1973 for Married Males 25 to 64 Years Old: Outflow Percentages

Father's Occupation at Age 40	Respondent's Occupation in 1973								
	1	2	3	4	5	6	7	8	Total
1 Professionals, Executives, & Related Workers	37.7	9.0	13.9	6.8	8.3	10.0	11.2	3.1	100.0
2 Clerical Workers	24.0	14.1	7.3	14.0	12.7	18.8	7.3	1.8	100.0
3 Sales Workers	13.0	2.7	42.5	5.4	14.3	8.4	8.7	5.0	100.0
4 Transportation & Communication Workers	10.1	5.4	10.9	27.7	27.3	9.6	7.1	1.9	100.0
5 Craftsmen, etc.	5.5	2.6	6.2	12.2	43.0	7.6	13.9	9.9	100.0
6 Sports & Service, etc.	10.0	5.1	10.6	9.4	18.0	23.6	14.3	9.0	100.0
7 Farmers, etc.	3.0	1.7	3.4	3.8	8.8	5.7	67.0	6.6	100.0
8 Farm Workers, etc.	1.5	1.4	3.9	3.7	8.6	5.8	15.5	59.6	100.0
ALL CATEGORIES	5.5	2.4	6.3	5.5	12.3	7.2	47.9	12.9	100.0

TABLE 1
Ranking of Eight Occupational Categories by Socio-Economic Status for Males Aged 15 and Above Employed in 1973 and 1968

	Occupational Category	1973 National Demographic Survey: Years of Schooling Mean (1)	1973 NDS: Years of Schooling % Difference (2)	1973 NDS: Income (pesos) Mean (3)	1973 NDS: Income (pesos) % Difference (4)	1968 National Demographic Survey: Years of Schooling Mean (5)	1968 NDS: Years of Schooling % Difference (6)	1968 NDS: Income (pesos) Mean (7)	1968 NDS: Income (pesos) % Difference (8)	1968 SES Scores**
1	Professionals, Executive, & Related Workers	14.07		5673.09		14.27		6489.45		2.24
			9.58		48.37		9.95		100.15	
2	Clerical Workers	12.84		3827.72		12.97		3242.24		0.93
			51.06		26.64		6.63		18.09	
3	Sales Workers	8.50		3019.46		7.80		2745.59		0.06
			7.59		17.83		−0.76		22.75	
4	Transportation & Communication Workers	7.90		2562.54		7.86		2236.72		−0.22
			2.20		12.28		8.26		4.85	
5	Craftsmen & Production Process Workers	7.73		2282.36		7.26		2133.33		−0.32
			−0.64		14.98		0.14		0.92	
6	Sports & Service Workers, Miners, & Quarrymen	7.78		1985.07		7.25		2113.83		−0.34
			83.06		62.91		78.57		97.16	
7	Farmers & Farm Managers	4.25		1218.47		4.06*		1072.12*		−0.90
			−15.00		20.53					
8	Farm Workers, Fishermen, Hunters, etc.	5.00		1010.90						−1.12

*Includes groups 7 and 8.
**Taken from Castro (1976: 26).

subgroup within a country (Moser and Hall 1954; Reiss, Duncan, Hatt and North 1961; Hodge, Siegel and Rossi 1964; Tiryakian 1958; Hodge, Treiman, and Rossi 1966). Data on occupations, years of schooling, and income from another NDS also jointly conducted by the University of the Philippines Population Institute and the National Census and Statistics Office (formerly the Bureau of the Census and Statistics) in May 1968, provided the basis for testing such an assumption in the Philippines.

A rank order of the eight occupational groups based on mean income and mean number of years of schooling from the 1968 and 1973 National Demographic Surveys is shown in Table 1. The percentage increase in education and income is presented as one moves up the ranks. All the percentage differences for mean income from both data sets are in the same direction. For education, two in the 1973 sample and one in 1968 are not in the same direction. In these cases, education and income were equally weighted and the larger percentage difference determined the rank of the occupational group. The results show that the ordering of the occupational groups whether based on the 1968 or the 1973 data is consistent, supporting the hypothesis of stability of occupational classification over time.

Castro (1976) did multiple regressions on the 1973 NDS urban males using prestige score as the dependent variable and the mean income and mean education for each occupation as the independent variables. The prestige scores were adopted from a pilot survey conducted for the Philippine Social Indicators Project (Ochoa and Eco 1975). The scores were ratings given by persons of both sexes, aged 15 and above, to 60 occupations according to a five-step prestige ladder. The mean rating of each occupation was calculated, standardized, and finally transformed so that all final values would fit into an arbitrary range of 1 to 100. The results confirm the current occupational scheme with only one exception — service and sports, etc. workers were ranked higher than craftsmen and production process workers (SES scores were 39.26 and 38.92 respectively), but the differences between the scores were minor.

A ranking of the eight occupational groups based on mean income and education of urban males reported in the 1968 NDS perfectly matches the present occupational ranking scheme. The 1968 SES scores are shown in Column 9 of Table 1.

HYPOTHESES

This study aims to test the following hypotheses:

A. Social Mobility
   1. A high degree of occupational inheritance characterizes the Philippine occupational structure.
   2. Upward mobility is more substantial than downward mobility.
   3. Where mobility occurs, it is predominantly short-distance rather than long-distance.

B. Fertility
   4. Mobility has an effect on fertility over and above the additive combination of origin and destination statuses.

PATTERNS OF INTERGENERATIONAL MOBILITY

Descriptive Analysis

Table 2 gives the distribution of married males 25 to 64 years old by their fathers' occupation at age 40 and their own occupation in 1973. The predominance of agricultural workers in the labor force is obvious. Almost two thirds of the employed males were sons of farmers and farm managers. Less than one eighth originated from the lowest occupational stratum. It can be gleaned that over the generation, all non-farm occupations gained at the expense of the agricultural occupations. The proportion of farm workers hardly changed over the generation.

Social Mobility Analysis

For the examination of social mobility patterns, the sample was limited to married males aged 25 to 64 years who reported their occupations in 1965 and 1973, as well as those of their fathers at age 40. It is believed that at these ages men have already completed their formal schooling and are also occupationally stable. Unmarried males were excluded for the simple reason that data needed for the mobility study were not asked of them in the 1973 NDS. The survey covered 7,032 currently married males aged 25 to 64 years which, when properly weighted, yielded an estimated total of 5,546,772 persons. Those who reported their occupations in 1973 and their fathers' occupations at age 40 formed 71.1 percent of the weighted sample or 3,945,933. Lack of information on either the son's occupation in 1973 or that of the father at age 40 resulted in a loss of almost 30 percent of all cases. Since the wife was the primary source of information during the NDS interview, the problem in eliciting the necessary data lay more greatly in the inability of the wife to identify her husband's father's occupation at age 40 than her husband's occupation. The weighted sample for which data on both the 1965 occupation and the 1973 occupation were obtained equalled 88.5 percent or 4,909,797.

It is apparent from the above that occupation is taken as the indicator of social position. Although occupation is far from perfect as a measure of social status, it probably remains the most important single criterion of status (Glas and Hall 1954: 178; Blau and Duncan 1967: 63; Boyd 1973: 7). Being closely related to economic status, education, and prestige (Rogoff 1953; Moser and Hall 1954; Reisman 1959), occupation continues and will continue to be the chief clue to social status in mobility studies (Pessen 1974).

In the analysis of intergenerational social mobility, the man's social background, indexed by his father's occupation at age 40, was compared with his current social class, represented by his current occupation, i.e., his occupation in 1973 at the time of the survey. In the case of intragenerational social mobility, the son's occupation in 1965 was compared with his occupation in 1973.

Analysis of the Social Mobility and Fertility Relationship

The subsample for this second portion of the study consisted of women less than 50 years old, currently married, married only once, and with a marital duration of at least ten years. This selection allowed for a partial control for marital duration in relation to fertility variations and changes in the couple's social status. These women were the spouses of the males involved in the social mobility investigation. The weighted size of the streamlined subsample was 3,010,009. Of these, 27 percent were urban based.

In this study fertility is measured in terms of the mean number of children ever born alive. Social origin is indexed by the husband's father's occupation at age 40 and present social class by the husband's occupation in 1973.

CLASSIFICATION AND RANKING OF OCCUPATIONS

To determine whether the occupational movement was upward or downward, it was necessary to rank the occupational groups under which the detailed occupations in the 1973 NDS were classified. In keeping with previous research on occupational classification or determination of the index of occupational socio-economic status conducted in the Philippines and elsewhere, education and income were used as the criteria. The procedure followed here was basically the same as the method used by Blau and Duncan (1967: 26) in their analysis of the American occupational structure.

Since the present study includes an analysis of intergenerational and intragenerational mobility, an assumption had to be made as to the stability of the occupational distribution by socio-economic status over the period of time under consideration. This assumption seemed reasonable in the light of extensive evidence on the relative stability of occupational prestige and similarity in the ranking of occupations by prestige from country to country, regardless of the level of development, and from subgroup to

SOCIAL MOBILITY AND FERTILITY IN THE PHILIPPINES

Eliseo A. de Guzman

In the process of development, traditional modes of designating status, power, and prestige are broken down and new criteria and valuation for the achievement of various positions in the social hierarchy are created. The family ceases to be an economic unit and the members of the family leave the household to find employment in the labor market. Increasing individual mobility, then, becomes one of the universal consequences of economic development.

The onset of industrialization brought about increasing social mobility among the economically developed countries as the proportion of the labor force engaged in agricultural occupations dwindled and the flow of manpower from the low-ranking occupations to the intermediate and upper-ranking occupations was facilitated by innovations in technology and work organization, improved education, and rising expectations.

In the face of similar changes gradually taking place in Philippine society, it becomes necessary to take a good look at the amount and degree of social mobility proceeding among the economically active population of the nation. The present research investigates the extent of social mobility, intergenerational and intragenerational, in the Philippines.

The consequences of social mobility for the individual, especially where major shifts are experienced, have also been the focus of research (Ellis and Lane 1967). It has been suggested that mobile persons are subjected to more strain than the non-mobile persons, since the former carry with them the characteristics of their original groups (Lipset and Bendix 1959).

One of the areas of concern is the influence of social mobility on fertility. Blau and Duncan (1967) suggested that social mobility disrupts social integration such that in order to reintegrate themselves those parents who experience mobility either have to limit their family size or have more children. Moreover, the disruptive effects of mobility on the individual's behavior are most likely to be found in traditional or modernizing societies where individuals experience low mobility rates (Germani 1966; Treiman 1970; Kessin 1971). Such observations lead us to test the social mobility hypothesis in the Philippine setting.

DESCRIPTION OF THE DATA

Data for this study were taken from the National Demographic Survey (NDS) of May 1973, conducted jointly by the University of the Philippines Population Institute in collaboration with the Bureau of the Census and Statistics (BCS), now the National Census and Statistics Office (NCSO).

The NDS sample consisted of 8,434 households. To obtain estimates for the total population of the Philippines in May 1973, a total of 550 weights were applied, one to each sample enumeration district covered.

APPENDIX
List of Variables and Sources

	Variable	*Sources*
y_1	Crude birth rate	a and b
y_2	General fertility rate	a and c
x_1	District gross product per capita	d
x_2	Infant mortality rate	a
x_3	Toddler mortality rate	a
x_4	Population density	b and e
x_5	Dependency ratio*	c
x_6	% of population in towns with 1,000 - 9,999 people	c
x_7	% of population in towns with ≥10,000 people	c
x_8	% of district gross product originating from agriculture	d
x_9	% of economically active males employed	c
x_{10}	% of employed males employed in agriculture	c
x_{11}	% of economically active females employed	c
x_{12}	% of employed females employed in agriculture	c
x_{13}	% of males ≥15 years of age without formal schooling	c
x_{14}	% of females ≥15 years of age without formal schooling	c
x_{15}	% of population literate	c
x_{16}	No. of motor vehicles per 1,000 people**	f
x_{17}	% of Malays in district population	c
x_{18}	% of Chinese in district population	c
x_{19}	% of Indians in district population	c
x_{20}	% of females ≥10 years of age staying at home	c
x_{21}	% of females aged 10–19 years married	c
x_{22}	Ratio of female literacy to male literacy	c
x_{23}	No. of doctors per 1,000 married women aged 15–44 years (MWRA)	c
x_{24}	% of permanent quarters with electricity service	c
x_{25}	% of permanent quarters with running water supply	c
x_{26}	No. of persons per bedroom in dwelling	c

* Population aged 0–14 years and ≥65 years/Population aged 15–64 years.

** Two motorcycles assumed to have the weight of one motor car.

SOURCES:

a Malaysia, Department of Statistics (1972).

b Malaysia, Department of Statistics (1975).

c Malaysia, Department of Statistics, *1970 Census of Population and Housing for Malaysia*, unpublished data.

d Salih and Lo (1975).

e District sizes obtained from Department of Surveying, Kuala Lumpur, 1977.

f Data obtained from Economic Planning Unit, Prime Minister's Department, Kuala Lumpur, 1977.

We found that the single most important socio-economic factor that can reduce fertility is demographic pressure at the household level. This is particularly true for families in the poorer districts. This suggests that families in Malaysia view reduced fertility more as a response to an immediate (though, of course, not necessarily unimportant) problem — that of insufficient living space at reasonable cost. It cannot be denied that there is an acute shortage of housing suitable for poor families.[14] According to the 1970 Population and Housing Census (Malaysia, Department of Statistics 1975) on the average there are 7.07 persons living in an urban quarter with an implied number of persons per room of 3.08.[15] This is above the United Nations recommended optimal density of 1.4 to 2.2 percent per room, and also above its set limit of three persons per room above which overcrowding occurs (Malaysia, The Treasury 1973: 62). This density is expected to become more acute as urbanization and development continues unless a more comprehensive housing policy is adopted. With respect to fertility reduction therein lies the dilemma — would a comprehensive housing policy, which would ease the problem of inadequate cheap living space for the present, increase the fertility rates and hence, raise the problem of overcrowding again sometime in the future? From this study it can be inferred that to break this cycle any comprehensive housing policy must be implemented side by side with the family planning program. In any completed low-cost housing scheme, a publicity campaign ought to be sustained stressing the fact that the occupants' present state of relative comfort in terms of living space can only be maintained through a low level of fertility.

The study also shows that an indirect factor like availability of social amenities has some negative effects on fertility. Results from the disaggregated samples indicate that among the poor districts the factor has no significant effect on fertility because of the consistently low levels of social amenity variables in these districts. In the rich districts, where there is a sufficient variation in the values of the social amenity variables, this factor assumes very pronounced significance. This finding is revealing. It indicates that in the poor districts social amenities like running water, electricity supply, and medical care are enjoyed by only a small proportion of the households. In the rich districts, where there is a better distribution of these amenities, they tend to have significant negative effects on fertility possibly because of their modernizing influence. This latter point provides another strong justification (besides improvement in societal welfare) for the provision of these facilities throughout the country.

The status of women, particularly with respect to their participation in the labor force, has a significant negative effect on fertility, especially in the richer districts where the opportunity cost of women staying at home is higher. Although women's participation in the labor force has not been explicitly used as a policy instrument for fertility control, this study indicates that this can be used rather effectively should the need arise, particularly when Malaysia has attained a nearly full employment situation.

Child mortality is seen to have very marginal effects on fertility. Child mortality rates, particularly the infant mortality rate, have been on the decline in Malaysia for a long time and this study indicates that they have reached a level at which further decline of the mortality rates, by themselves, would have little or no effect on fertility. This does not mean that public health programs should not be further improved for the betterment of society; but it does show that as a policy instrument for fertility control, further improvements in child mortality rates would be relatively ineffective.

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[14]See Malaysia (1976) Chapter XIX for a detailed discussion of this issue.

[15]There were on the average, 2.29 rooms per living quarter in 1970.

wives have to perform off-family activities in one form or another in order to supplement the family income so that the family can remain above the poverty level (see Cheong et al. 1977). Hence, in these districts the issue of the status of women is non-existent since the majority of them are already working and helping to supplement the family income. The pronounced significance of this factor for the rich districts indicates that in the more developed districts, where better-paying jobs for women are more readily available and where the opportunity-cost of looking after children by the wife at home is higher, female participation in the labor force does have a considerable negative impact on fertility. The Availability of Social Amenities factor, although relatively unimportant in both the pooled sample and the poor subsample, is the single most important factor with respect to its effects (negative) on the fertility measures for the rich subsample. It accounts for 32.5 percent and 42.3 percent of the crude birth rate and the general fertility rate respectively for the rich subsample. This lends firmer support to the hypothesis that presence of other leisure activities, e.g., availability of television through availability of electricity, tend to reduce fertility level. The absence of this factor in the poor subsample may be due to the consistently low and insufficient variation in the social amenity variables for the poor districts.[12]

The Demographic Pressure factor, which was found to be the most prominent for the pooled sample, maintains its paramount role (negatively) only in the poor subsample. It accounts for 23 percent and 53.3 percent of the variance in the crude birth rate and the general fertility rate respectively for the poor subsample. In the rich subsample, it has some significant negative effect only on the crude birth rate. This is interesting and it suggests that in the Malaysian context families in the poorer districts respond, in terms of their fertility behavior, more to direct environmental factors like relative availability of living space and less to more indirect variables like status of women and availability of social amenities.

CONCLUSIONS AND POLICY IMPLICATIONS

As was stated earlier, a study on the determinants of fertility based particularly on intra-national data can have policy implications in terms of the design of the population policy that ought to be pursued. In this respect the study has been fairly fruitful. Unlike many other studies (principally using cross-country data) which found a substantial relationship between economic development and literacy, we found that economic development and literacy have only a marginal effect on fertility in Malaysia. This was true both for the pooled sample and the disaggregated samples. The pertinent conclusion is that, in Malaysia, though economic development and modernization do reduce fertility these processes, by themselves, would not be sufficient to ensure a rate of fertility decline consistent with a healthy rate of growth in national income. To achieve a rate of fertility decline consistent with the overall target of two percent by 1985 (Malaysia 1976: 412), a vigorous national family planning program ought to be implemented side by side with economic development. This, of course, was initiated in 1967 with the formation of the Malaysian National Family Planning Board. A key current controversy with regard to family planning programs relates to their effectiveness. Is it economic development that makes them effective or have they been effective independently of economic development?[13] What this study shows indirectly is that the program is indispensable, and should be more vigorously implemented, if the overall population target is to be achieved in Malaysia.

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[12]For example, the mean (and standard deviation) of the percentage of households with electricity in the poor subsample is 21.83 percent (s.d. = 10.0 percent).

[13]See, for example, Berelson (1974) for a detailed discussion of this issue.

TABLE 6
Summary of Effects of Factors on Fertility Measures — Rich Districts

Fertility Measures	Effect of Factors					Total % of Variance Accounted
	I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	
Crude birth rate	3.2 (−)	5.8	26.0 (−)	32.5 (−)	6.8 (−)	74.0
General fertility rate	2.6 (−)	5.3	22.1 (−)	42.3 (−)	N.S.	73.0

N.S. = not significant, i.e., less than 1 percent in variance explained.

TABLE 7
Summary of Effects of Factors on Fertility Measures — Poor Districts

Fertility Measures	Effect of Factors				Total % of Variance Accounted
	I Status of Economic Development & Literacy	II Child Mortality	III Demographic Pressure	IV Status of Women	
Crude birth rate	13.7 (−)	N.S.	23.0 (−)	N.S.	40.0
General fertility rate	4.0 (−)	N.S.	53.3	N.S.	60.0

N.S. = not significant, i.e., less than 1 percent in variance explained.

significance in the rich subsample from insignificance in the pooled sample and insignificance in the poor subsample is surprising. This may be attributed to the fact that child mortality rate (especially infant mortality rate) figures are subject to measurement errors particularly in the poor districts, where many of the births still occur at home. The Status of Women factor, although insignificant with respect to effects on fertility measures in the poor subsample and marginal with respect to effects on these measures in the pooled sample, has a substantial negative effect on the fertility measures in the rich subsample. The fac'or accounts for 26 percent and 22.1 percent of the variance in the crude birth rate and general fertility rate respectively in the rich subsample. This factor may have assumed such prominence for the rich districts by virtue of the fact that it is only in the rich (and more "modernized") districts that the concept of a working husband and a housewife has been clearly defined. In the poorer districts, nearly all the

TABLE 5 (Continued)
Principal-component Factor Loadings for Poor Subsample

	Item	Factors I Status of Economic Development & Literacy	II Child Mortality	III Demographic Pressure	IV Status of Women	h_i^2
x_{16}	No. of motor vehicles per 1,000 people	0.86				0.77
x_1	District gross product per capita	0.67		0.41	0.32	0.75
x_{18}	% of Chinese in district population	0.84				0.79
x_{13}	% of males ≥ 15 years of age without formal schooling	−0.86			−0.32	0.89
x_{14}	% of females ≥ 15 years of age without formal schooling	−0.72			−0.30	0.68
x_9	% of economically active males employed	0.78				0.68
x_{10}	% of employed males employed in agriculture	−0.97				0.92
x_{24}	% of permanent quarters with electricity service	0.74				0.61
x_{25}	% of permanent quarters with running water supply	0.74	0.33			0.67
x_{15}	% of population literate	0.73				0.58
x_{19}	% of Indians in district population	0.67				0.49
x_{23}	No. of doctors per 1,000 MWRA	0.55		0.44		0.61
y_1	Crude birth rate	−0.37	−0.09	−0.48	0.06	0.40
y_2	General fertility rate	−0.20	−0.09	−0.73	−0.09	0.60

TABLE 5
Principal-component Factor Loadings for Poor Subsample

	Item	Factors				h_1^2
		I Status of Economic Development & Literacy	II Child Mortality	III Demographic Pressure	IV Status of Women	
x_2	Infant mortality rate		0.99			0.99
x_3	Toddler mortality rate		0.49			0.29
x_{11}	% of economically active females employed	−0.44			0.82	0.92
x_{12}	% of employed females employed in agriculture	−0.40		−0.38	0.76	0.88
x_{20}	% of females ≥ 10 years of age staying at home				−0.84	0.79
x_{21}	% of females aged 10–19 years married	−0.35			−0.83	0.84
x_{22}	Ratio of female to male literacy				0.45	0.34
x_6	% of population in towns with 1,000 − 9,999 people			0.44		0.29
x_7	% of population in towns ≥ 10,000 people	0.30		0.68		0.57
x_8	% of district gross product originating from agriculture	−0.34		−0.81		0.83
x_4	Population density			0.45		0.44
x_5	Dependency ratio			0.45		0.25
x_{26}	No. of persons per bedroom in dwelling			0.97		0.97
x_{17}	% of Malays in district population	−0.78				0.81

TABLE 4 (Continued)
Principal-component Factor Loadings for Rich Subsample

Item	Factors I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	h_i^2
x_5 Dependency ratio				0.47	0.68	0.76
x_{26} No. of people per bedroom in dwelling					0.98	0.98
x_{17} % of Malays in district population	−0.56					0.70
x_{18} % of Chinese in district population	0.85					0.83
x_{19} % of Indians in district population	0.49				0.34	0.40
x_{16} No. of motor vehicles per 1,000 people	0.71				0.54	0.88
x_1 District gross product per capita	0.73					0.60
x_8 % of district gross product originating from agriculture	−0.76					0.84
x_{13} % of males ≥15years without formal schooling	−0.83				−0.35	0.85
x_{14} % of females ≥15years without formal schooling	−0.71				−0.31	0.61
x_9 % of economically active males employed	0.49					0.36
x_{10} % of employed males employed in agriculture	−0.97					0.97
x_{15} % of population literate	0.69				−0.31	0.64
y_1 Crude birth rate	−0.18	0.24	−0.51	−0.57	−0.26	0.74
y_2 General fertility rate	−0.16	0.23	−0.46	−0.65	−0.08	0.73

TABLE 4
Principal-component Factor Loadings for Rich Subsample

	Item	Factors					
		I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	h_1^2
x_2	Infant mortality rate		0.99				0.99
x_3	Toddler mortality rate		0.66				0.52
x_{11}	% of economically active females employed			0.83			0.73
x_{12}	% of employed females employed in agriculture	−0.40		0.85			0.94
x_{20}	% of females ≥ 10 years of age staying at home			−0.91			0.86
x_{21}	% of females aged 10 − 19 years married			−0.86		0.30	0.86
x_{22}	Ratio of female to male literacy			0.77			0.73
x_{23}	No. of doctors per 1,000 MWRA				0.78	0.38	0.81
x_{24}	% of permanent quarters with electricity service				0.78	0.41	0.83
x_{25}	% of permanent quarters with running water supply	−0.42			0.74		0.79
x_4	Population density			−0.30	0.43	0.76	0.90
x_6	% of population in towns with 1,000 − 9,999 people					0.59	0.54
x_7	% of population in towns with ≥ 10,000 people					0.38	0.25

Variation in the level of contraceptive knowledge would have important effects on the fertility behavior. While in developed countries perfect (or almost perfect) awareness of contraceptive knowledge can be assumed, this is certainly not so in developing countries. (ii) Opportunity cost of mother-time spent on children is related to economic development. While in developed countries the opportunity cost is high, in developing countries, with their extended family norm and the relative availability of domestic help, the opportunity cost is certainly much lower. To avoid such sources of errors, studies like Friedlander and Silver (1967) and Janowitz (1971) have treated developed and developing countries as different samples for the purpose of analysis. As a consequence, some of the conclusions drawn from these two studies were different from that of the others that treated these two groups of countries as similar units for the purpose of analysis.

In this section we adopted the approach of separating the developed (or rich) districts from the developing (or poor) districts for the purpose of analysis. Although the reasons for the separation of the two groups for analytical purposes is less persuasive than in intra-country studies, nevertheless such separation would shed further light on the conclusions drawn from the analysis of the pooled sample.

For the purpose of separating the districts into the rich and the poor categories we ranked them in descending order of district gross product per capita. The top 35 districts were classified as the rich districts, while the bottom 35 districts were classified as the poor districts. Principal-component factor analysis was then performed on each of the two samples of rich and poor districts. Based upon analysis of the results produced by rotating four through ten factors, the number of factors was set at five for the rich districts and four for the poor districts. The principal factors were rotated using the varimax criterion. The summary of the results of the analysis are presented in Tables 4 and 5. In each of these tables we have included only factor loadings whose absolute values are at least 0.3 and have assigned each variable to that factor on which it has the highest or second highest loading.

From Table 4 it can be seen that the five principal factors derived from the sample of rich districts — Status of Economic Development and Literacy, Child Mortality, Status of Women, Availability of Social Amenities, and Demographic Pressure — are more or less identical to the five factors derived from the pooled sample. The five factors now account for 74 percent of the variance in the crude birth rate and 73 percent of the variance in the general fertility rate for the rich districts. From the factor analysis performed on the sample of poor districts only four factors emerged clearly, i.e., Status of Economic Development and Literacy, Child Mortality, Demographic Pressure, and Status of Women. The variables associated with Availability of Social Amenities did not stand out on their own as a factor; their relative high correlation with economic development and literacy have led to these variables being grouped under the first factor. Tables 6 and 7 summarize more clearly the effects of the identified factors on the fertility measures. Just as in the pooled sample, the Status of Economic Development and Literacy factor has a significant negative effect on both the fertility measures for each of the two disaggregated samples. The effects tend to be more pronounced for the poor districts than for the rich ones. This is not surprising since the distribution of economic development and literacy among the poor districts tends to be more unequal than that in the rich districts.[11] The Child Mortality factor is seen to have some significant positive effect on the two fertility measures for the sample of rich districts. Although this result is in conformity with common sense rationale and has also been found in other studies based on cross-national data, e.g., Friedlander and Silver (1967), its emergence to

[11]For example, the mean (and standard deviation) of percentage literacy for the sample of rich and poor districts are 61.6 percent (s.d. = 5.07 percent) and 52.8 percent (s.d. = 12.8 percent) respectively.

Factor II (Child Mortality) is found to have insignificant effects on fertility. This may be attributable to the fact that, compared with other developing countries, the rate of infant and toddler mortality is rather low[10] and that families, in general, have a high degree of confidence in the availability of medical services when their children are sick, and in the survival of their children after birth. The result does not mean that child mortality rates have no effect on fertility; rather, it indicates that child mortality rates have dropped (over the entire country) to a level at which people have attained a sense of confidence with respect to the survival of their offsprings, and any further reduction in the mortality rates, by themselves, would not have a significant effect on the fertility level.

Factor III (Status of Women) is found to have a significant negative effect on the fertility measures, particularly with respect to the general fertility rate. Although it has been well-established that in developed economies there is a negative relationship between female labor force participation (included in Factor III) and fertility (Sweet 1973; Berent 1970), no clear-cut relationship can be found for developing economies. Our finding may be added to that of a number of other studies which detected a negative relationship between female participation in the labor force and fertility in developing countries (Hass 1977; Heer and Turner 1965; Maurer et al. 1973).

Factor IV (Availability of Social Amenities) is found to have some negative effect on the general fertility rate. This indicates that availability of medical services and better domestic living conditions tend to reduce the general fertility rate. This conforms to common sense rationale since availability of medical services implies availability of advice and prescriptions for contraceptives, and availability of utility services like electricity enable households to have television and radio which allow for quick diffusion of information and modern ideas.

Factor V (Demographic Pressure) is, by far, the most important determinant of fertility within the Malaysian context. From Table 3 it can be seen that this factor alone accounts for 62.4 percent of the variance in the crude birth rate and 50.4 percent of the variance in the general fertility rate. Our finding of a negative relationship between demographic pressure and fertility conforms to the findings of Adelman (1963) and Friedlander and Silver (1967), though these studies were on a cross-country basis. The fact that both macro and household demographic variables are included in this factor and are highly correlated among themselves indicate that macro variables like population density are really proxy variables for the household variables which reflect the relative price of living space. The large proportion of variance explained in the fertility measures by this single factor can be explained by the fact that there is a high degree of uneven distribution of population in the country. Whereas metropolitan towns tend to be highly congested, the rural districts are scarely populated. This study indicates that the single most important factor affecting the fertility behavior of a household is its immediate environment, i.e., the relative availability of living space in the household. Families in more congested households tend to be less fertile than families in less congested households.

Effects of factors on rich and poor districts

One criticism of studies like that of Adelman (1963), Weintraub (1962) and Russett et al. (1964) is that these studies pooled the data of developed and developing countries in one single sample for the purpose of analysis. Such a method failed to recognize that developed and developing countries respond differently, particularly in their fertility behavior, to socio-economic factors. To cite two possible important examples: (i)

[10]The mean infant mortality rate for West Malaysia is 48.0 which is relatively low when compared to other developing countries.

people, and percentage of population in towns with over 9,999 people — reflect the demographic pressure at the macro level. The remaining two variables — dependency ratio and the number of people per bedroom in a dwelling — reflect the demographic pressure at the micro or household level. There is a strong degree of positive correlation between the macro and micro variables, e.g., the Pearson correlation coefficient between population density and number of people per bedroom in a dwelling is 0.52.

Effects of factors on fertility measures in pooled sample

The effects of the factors on fertility measures can be studied more closely by examining the square of the factor loadings between the fertility measures and factors. Table 3 summarizes these values.

From Table 3 it can be seen that the five factors together account for 66 percent of the variance in the crude birth rate and 63 percent of the variance in the general fertility rate. Factor I (Status of Economic Development and Literacy) is seen to have some, though marginal, negative effect on the fertility measures. This result is not surprising and is consistent with the result of Friedlander and Silver (1967) which found a weak partial negative coefficient between level of economic development and fertility for developing countries,[8] and that of Farooq and Tuncer (1974) which found a weak negative relationship between female literacy and crude birth rate in Turkey.[9] Education has the direct effect of providing information on methods of fertility control. It may also raise the desire for material goods and lower the relative desire for children. Further literacy, in the Malaysian case, is clearly related to economic development which increases job opportunities for women and, in the process, increases the costs of raising children. In fact, with increasing education and economic development the ideal family size itself may be altered. The weak effect of this factor on fertility found in this study suggests that though literacy and economic development are important for reduction of fertility, their effects on fertility tend to be small and can be felt only on a long-term basis.

TABLE 3
Summary of Effects of Factors on Fertility Measures — Pooled Sample

Fertility Measures	Effect of Factors					Total % of Variance Accounted
	I Status of Economic Development & Literacy	II Child Mortality	III Status of Women	IV Availability of Social Amenities	V Demographic Pressure	
Crude birth rate	1.2 (−)	N.S.	1.7 (−)	N.S.	62.4 (−)	66.0
General fertility rate	3.2 (−)	N.S.	4.8 (−)	4.4 (−)	50.4 (−)	63.0

N.S. = not significant, i.e., less than 1 percent in variance explained.

[8]However, it must be pointed out that this study was performed on an inter-country basis.

[9]See also Janowitz (1971), and Adelman (1963) for further evidence of negative relationship between literacy and fertility.

The data presented in Table 14 indicate that the husbands' and wives' attitudes towards FP had similar effects on fertility. For example, in the rural sample, wives whose husbands approved of FP had 4.4 live births compared with 5.0 live births among women whose husbands disapproved of FP. This pattern is also seen in the urban sample.

Since in the urban areas husbands' and wives' attitudes towards FP affected fertility significantly, the effect of their combined attitudes on fertility was also looked into. Table 15 attempts to assess that effect. The lowest number of live births, 3.2, was seen when both husband and wife approved of FP. The highest number of live births, 5.9, was for husbands and wives who both said, "Don't know."

Circumstances of Childbirth and Fertility

As part of the pregnancy and birth histories, married women were asked where each of their childbirths had occurred and who had delivered the child. The "usual place" was the place where the majority of deliveries occurred and the "usual person" was the person who delivered the majority of the babies. The categories in Table 16 represent degrees of modernity, i.e., the first category represents the lowest degree of modernity and the last, the highest degree. Conversely the categories represent degrees of traditionalism, from most to least traditional. It was hypothesized that women who usually delivered their babies at hospitals or clinics have fewer live births than those who

TABLE 14
Mean Number of Live Births by Husband's Attitude Towards FP and by Total Duration of Women's Marriages

Husband's Attitude Towards FP	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5–9	10 and Above	Don't Know	Total
Rural					
Approve	1.2 (65)	3.0 (102)	6.1 (207)	* (0)	4.4 (374)
Disapprove	1.3 (20)	3.2 (17)	6.6 (65)	* (0)	5.0 (102)
Don't know	* (5)	* (1)	6.1 (16)	* (1)	4.9 (23)
Never talked to husband	1.0 (162)	2.9 (113)	6.2 (495)	5.7 (13)	4.6 (783)
TOTAL	1.1 (252)	3.0 (233)	6.2 (783)	5.8 (14)	4.6 (1282)
Urban					
Approve	1.1 (142)	2.7 (182)	4.7 (452)	* (5)	3.6 (781)
Disapprove	* (9)	2.9 (13)	6.0 (37)	* (2)	4.5 (61)
Depends	1.3 (12)	* (2)	5.5 (22)	* (0)	3.9 (36)
Don't understand "FP"	1.2 (31)	2.3 (22)	6.2 (181)	* (6)	5.2 (240)
TOTAL	1.1 (194)	2.6 (219)	5.2 (692)	4.8 (13)	4.0 (1118)

Note: The x^2 values between husband's attitude towards FP and number of live births are significant at 0.001 for both rural and urban areas.

*Mean not calculated. Number of respondents is less than 10.

TABLE 15
Mean Number of Live Births by Wife's and Husband's Attitudes Towards FP (Direct Question), Urban Areas

Men's Attitude Towards FP	Mean No. of Live Births by Women's Attitude Towards FP					
	Approve	Disapprove	Depends	Don't Understand "FP"	Don't Know	Total
Approve	3.2 (583)	4.0 (25)	3.5 (14)	4.6 (95)	4.7 (83)	3.5 (800)
Disapprove	4.5 (24)	* (3)	* (2)	* (8)	6.8 (13)	5.4 (50)
Depends	5.3 (10)	* (0)	* (2)	* (5)	* (3)	5.3 (20)
Don't understand "FP"	5.2 (69)	4.9 (14)	* (4)	5.2 (91)	5.3 (63)	5.1 (241)
Don't know	4.5 (61)	4.6 (10)	* (2)	5.5 (41)	5.9 (77)	5.3 (191)
TOTAL	3.5 (747)	4.5 (52)	3.7 (24)	5.0 (240)	5.4 (239)	4.2 (1302)

*Mean not calculated. Number of respondents is less than 10.

TABLE 16
Mean Number of Live Births by "Usual Place" of Delivery and "Usual Person" Who Delivered Baby and by Total Duration of Women's Marriages, Rural Areas

"Usual Place" "Usual Person"	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5–9	10 and Above	Don't Know	Total
Place					
Home/others	1.6 (151)	3.2 (213)	6.8 (1096)	5.6 (70)	5.7 (1530)
Health station/ hospital/clinic	1.4 (52)	2.4 (34)	4.6 (58)	* (1)	2.9 (145)
TOTAL	1.6 (203)	3.1 (247)	6.7 (1154)	5.5 (71)	5.5 (1675)
Person					
Self/others	1.5 (36)	3.1 (51)	7.1 (198)	6.0 (23)	5.7 (308)
Granny midwife	1.6 (104)	3.2 (153)	6.7 (844)	5.4 (45)	5.7 (1146)
Public health midwife/nurse	1.5 (24)	3.2 (13)	5.9 (57)	* (2)	4.4 (96)
Doctor	1.4 (39)	2.3 (30)	5.1 (57)	* (1)	3.3 (127)
TOTAL	1.6 (203)	3.1 (247)	6.7 (1156)	5.5 (71)	5.5 (1677)

Note: The x^2 values between "usual place" and number of live births and between "usual person" and number of live births are significant at 0.001.

*Mean not calculated. Number of respondents is less than 10.

usually deliver at health stations or at home. It was further hypothesized that women with more modern values or practices, i.e, they want their babies to be delivered or usually have their babies delivered by a doctor, have lower fertility than women with different values or practices.

Data in Table 16 show that women who usually delivered their babies at less modern facilities, e.g., at home, had live births almost two times more than those who usually used modern facilities (5.7 compared with 2.9 live births). The association between places where babies were usually delivered and number of live births is very strong (gamma = 0.66). Similarly, women who usually had their babies delivered by more modern medical personnel, i.e., doctors, nurses, and public health midwives, had significantly fewer live births than women who delivered their babies themselves, or who had granny midwives deliver their babies. The association between this variable and number of live births is quite strong (gamma = 0.25).

When the data are controlled for the total duration of women's marriages, the original pattern, i.e., the more modern the practice, the fewer the number of live births, persists in all the categories of marriage duration. See Table 16.

Mass Media Exposure and Fertility

Reading newspapers is not a common practice among the Thai population, even in the urban areas. For example, only one third of the Bangkok-Thonburi sample read the newspaper everyday or almost everyday. The radio, on the other hand, is clearly a medium to which most people are exposed. However, radio listening is slightly more common in rural than in urban areas. The reason for this may be the nature of the work done in urban areas and the much greater frequency with which television is viewed in these areas.

The data in Table 17 show the relationship between newspaper reading and listening to the radio on one hand, and number of live births of urban women on the other. The analysis of these data showed a strong inverse relationship between reading newspapers and listening to the radio and number of live births. The difference in the number of live births between those who read newspapers often and those who never did so was equal to two live births (5.2 - 3.2 = 2.0). Similarly, the difference between those who often listened to the radio and those who never did was 1.1 live births (4.8 - 3.7 = 1.1). This indicates that reading the newspaper has a stronger effect on fertility than does listening to the radio. This finding is supported by high gamma values, i.e., 0.34 for newspaper reading and number of live births and 0.19 for listening to the radio and number of live births. Women who read the newspapers, but not often, and those who listened to the radio, but not often, had fertility rates in between these two groups.

When the data were controlled for the total duration of women's marriages, the original relationship was generally retained, especially among women who had been married for five or more years. However, among women who didn't know their marriage duration, those who never listened to the radio had the lowest number of live births and, conversely, those who often listened to the radio had the highest fertility. This finding differs from the original relationship. See Table 17.

Finally, results of the present study confirm the reverse relationship hypothesis that a higher mass media exposure brings about lower fertility.

TABLE 17
Mean Number of Live Births by Women's Mass Media Exposure (Newspaper and Radio) and by Total Duration of Women's Marriages, Urban Areas

Women's Mass Media Exposure	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Reading newspaper					
Often	1.0 (198)	2.4 (163)	4.4 (474)	3.9 (23)	3.2 (858)
Not often	1.2 (154)	2.7 (135)	5.0 (323)	3.4 (20)	3.5 (632)
Never	1.2 (75)	2.9 (73)	6.0 (557)	5.2 (52)	5.2 (757)
TOTAL	1.1 (427)	2.6 (371)	5.2 (1354)	4.6 (95)	4.0 (2247)
Listening to radio					
Often	1.0 (278)	2.5 (232)	4.9 (752)	4.8 (51)	3.7 (1313)
Not often	1.2 (117)	2.8 (101)	5.5 (412)	4.5 (27)	4.2 (657)
Never	1.5 (32)	3.2 (36)	5.8 (189)	3.8 (16)	4.8 (273)
TOTAL	1.1 (427)	2.6 (369)	5.2 (1353)	4.5 (94)	4.0 (2243)

Note: The x^2 values between newspaper reading and number of live births and between listening to the radio and number of live births are significant at 0.001.

Attitude Towards Family Size and Fertility

Table 18 presents data showing the association between women's attitudes towards having "few" and "many" children and the number of live births. In general women's attitudes on this subject affected their fertility in the same manner as their husbands' attitudes did. Women who had a positive attitude towards having a small family had

TABLE 18
Mean Number of Live Births by Women's Attitude Towards Family Size and by Total Duration of Women's Marriages, Urban Areas

Women's Attitude Towards Family Size	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
2 children only					
Advantageous	1.0 (222)	2.4 (176)	4.8 (527)	4.5 (45)	3.5 (970)
Disadvantageous	1.2 (62)	2.8 (76)	5.9 (328)	5.4 (17)	4.8 (483)
Both	1.1 (91)	2.8 (87)	5.1 (358)	4.1 (18)	4.0 (554)
Neither/don't know	* (7)	* (3)	6.3 (18)	* (2)	4.8 (30)
TOTAL	1.1 (382)	2.6 (342)	5.2 (1231)	4.7 (82)	4.0 (2037)
5 or more children					
Advantageous	1.1 (43)	2.8 (25)	5.7 (203)	4.9 (15)	4.7 (286)
Disadvantageous	1.1 (205)	2.6 (181)	4.8 (520)	4.7 (35)	3.6 (941)
Both	1.1 (141)	2.5 (139)	5.2 (517)	4.6 (32)	4.0 (829)
Neither/don't know	* (7)	* (3)	7.3 (11)	* (1)	4.1 (22)
TOTAL	1.1 (396)	2.6 (348)	5.2 (1251)	4.7 (83)	4.0 (2078)

Note: The x^2 values between attitude towards having two children and the number of live births, and between having five or more children and the number of live births are significant at 0.001.

*Mean not calculated. Number of respondents is less than 10.

fewer children than those who had a negative attitude. However, those who had no specific attitude towards having many children had the highest number of live births. Attitudes towards having a small family tended to have a stronger effect on fertility when manifested by women rather than by husbands (gamma = 0.15). Women's attitudes towards having many children did not seem to affect the number of live births at all, as is evident from the gamma value of only 0.02.

When controlled for the total duration of women's marriages, the data show that attitude towards family size had no effect on fertility among those who were married for less than five years. However, the longer the marriage duration, the greater the effect of this attitude on the number of live births. See Table 18.

The above analyses have shown that both the wives' and husbands' attitudes towards a specific number of children affect fertility. Data in Table 19 show the combined attitudes of couples on family size. When both husband and wife had a positive attitude towards a small family, i.e., "few children" or a negative attitude towards a big family, i.e., "many children," a lower fertility was manifested. For example, couples who shared a positive attitude towards the advantages of having a few children had 3.5 live births, while couples who shared a negative attitude had 5.6 live births. Couples who shared a positive attitude towards the advantages of having many children had 5.2 live births, while those who shared a negative attitude had 3.7 live births.

Analysis of the data also showed that attitudes of wives towards a small family size

TABLE 19
Mean Number of Live Births by Wife's and Husband's Attitudes Towards Family Size, Urban Areas

Husband's Attitude Towards Family Size	Mean No. of Live Births by Wife's Attitude Towards Family Size							
	Advantageous		Disadvantageous		Both		Total	
Small family								
Advantageous	3.5	(428)	4.6	(138)	4.0	(152)	3.9	(718)
Disadvantageous	4.4	(64)	5.6	(127)	4.9	(52)	5.2	(243)
Both	3.9	(134)	4.6	(70)	4.4	(157)	4.3	(361)
TOTAL	3.7	(626)	5.0	(335)	4.3	(361)	4.2	(1322)
Large family								
Advantageous	5.2	(67)	5.2	(59)	4.9	(50)	5.1	(176)
Disadvantageous	4.8	(51)	3.7	(338)	4.0	(167)	3.9	(556)
Both	4.8	(72)	3.7	(232)	4.4	(351)	4.2	(655)
TOTAL	4.9	(190)	3.9	(629)	4.3	(568)	4.2	(1387)

tended to have stronger influence on the number of live births than did husbands' attitudes. For example, if wives saw it as advantageous to have only a few children but their husbands saw it as disadvantageous, women had only 4.4 live births. However, when these attitudes were reversed, women had 4.6 live births. When it comes to attitude towards having many children, however, husbands', rather than wives', attitudes exerted the stronger influence on their wives' fertility. For example, if women said it was disadvantageous to have many children but husbands said the opposite, women had 5.2 live births. When these attitudes were reversed, women had only 4.8 live births. See Table 19.

Desire to Depend on Children in Old Age and Fertility

The desire to depend on children for help, companionship, or old age security, is one of the most frequently cited reasons why the fertility level is high in less developed countries. In Thailand, children can be useful in doing household and farming chores, especially in rural areas where farming is a labor-intensive job. Sons begin to share in the household chores or to work in the family enterprise at an average age of 12 years, while daughters begin around 11 years old.

Data in Table 20 show a significant difference in the number of live births between women who wanted to depend on their children in their old age and those who did not want to do so. These two groups had 4.7 and 3.7 live births respectively. Women who did not think that they could depend on their children in old age had fertility levels as low as those who did not want to depend on their children. The relationship between these two variables had a gamma value of 0.16.

When the data were controlled for the total duration of women's marriages, it was seen that among women who had been married for nine years or less, those who said they wanted to depend on their children had slightly lower fertility levels than women in the other categories. See Table 20.

Finally, the results of the present study confirm the hypothesis that women who want to depend on their children in old age have more live births than those who do not want to depend on their children.

TABLE 20
Mean Number of Live Births by Women's Desire to Depend on Children in Old Age and by Total Duration of Women's Marriages, Urban Areas

Women's Desire to Depend on Children in Old Age	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Yes	1.0 (115)	2.7 (95)	5.8 (521)	5.2 (38)	4.7 (769)
No	1.3 (23)	2.8 (30)	4.7 (74)	* (2)	3.7 (129)
Don't know/ not sure	1.4 (13)	2.8 (11)	5.4 (40)	* (1)	4.1 (65)
Don't think can depend on children	1.2 (237)	2.6 (223)	5.0 (687)	4.6 (45)	3.8 (1192)
TOTAL	1.2 (388)	2.7 (359)	5.3 (1322)	4.9 (86)	4.1 (2155)

Note: The x^2 value between the desire to depend on children in old age and the number of live births is significant at 0.001.

*Mean not calculated. Number of respondents is less than 10.

Practice of Contraception and Fertility

The relationship between the practice of contraception and number of live births can be seen from the data in Table 21. In the rural areas, women in all three categories, i.e., using now, used before but not now, and never used, had similar number of live births — 4.6, 4.8, and 4.6, respectively. In contrast, the urban women who were using contraceptives "now" were the ones who had the most live births, 4.0. Women who had practiced contraception "before but not now" had the second lowest figure (3.4) and women who had "never used" it before had the lowest number of live births (3.1). It may be said that FP among these women is for the purpose of preventing the birth of many children rather than for child-spacing. The relationship between the practice of contraception and number of live births is strong in the urban sample (gamma = 0.29), but not in the rural sample (gamma = 0.05).

When controlled for the total duration of women's marriages, the data show that the practice of contraception seems to have a stronger effect on the number of live births among rural and urban women whose marriage duration was less than five years. For example, in the urban sample, women who had never used a contraceptive method had fertility levels 43 percent lower than those who were "now" using one and those who had previously done so. However, when the duration of marriage was longer, i.e., five years or more, differences between the non-users and users (now and before) were 11 percent and 4 percent, respectively. See Table 21.

Finally, the results of the present study confirm the hypothesis that those who practiced or are practicing contraception have more live births than those who have never practiced it.

In conclusion, among all the variables which were analyzed from Tables 1 to 21, 12 variables from the rural sample and 18 variables from the urban sample were found to be significantly related to fertility. See Table 24.

TABLE 21
Mean Number of Live Births by Practice of Contraception and by Total Duration of Women's Marriages, Currently Married Women, Aged 15-49

Practice of Contraception	Mean No. of Live Births by Total Duration of Women's Marriages (years)				
	Below 5	5-9	10 and Above	Don't Know	Total
Rural					
Using now	1.7 (30)	3.2 (71)	5.7 (172)	* (0)	4.6 (273)
Used before	1.4 (15)	3.3 (16)	6.5 (44)	* (0)	4.8 (75)
Never used	1.0 (214)	2.9 (153)	6.3 (592)	5.4 (14)	4.6 (973)
TOTAL	1.1 (259)	3.0 (240)	6.2 (592)	5.4 (14)	4.6 (1321)
Urban					
Using now	1.4 (110)	2.7 (167)	5.1 (444)	* (6)	4.0 (727)
Used before	1.5 (45)	2.6 (59)	5.1 (73)	* (4)	3.4 (181)
Never used	0.8 (232)	2.4 (115)	4.9 (356)	* (5)	3.1 (708)
TOTAL	1.1 (387)	2.6 (341)	5.0 (873)	4.2 (15)	3.6 (1616)

Note: The x^2 value between the practice of contraception and the number of live births is significant at 0.001.

*Mean not calculated. Number of respondents is less than 10.

A REGRESSION ANALYSIS OF THE RELATIONSHIP BETWEEN SOCIO-DEMOGRAPHIC FACTORS AND FERTILITY

The major purpose of this section is to analyze the relationship between socio-demographic and economic factors and fertility among rural and urban Thai women. Specifically, variables which were found to be significantly related to the number of live births are incorporated to assess the total effect of these variables on fertility. Furthermore, the effects of each of these variables were compared with one another to ascertain which factor(s) had more influence on fertility.

A total of 29 variables were initially considered for inclusion in the regression models. However, not all of these variables were included in the models because of the high multicollinearity among them. The zero-order correlation matrix among these variables provided the basis for the selection of the 21 variables (8 rural, 13 urban) included in the models.[2] See Tables 22 and 23.

Table 22 presents the b, β, and R^2 of each regression analysis. This model explains more than half of the variation in the number of live births of rural women ($R^2 = .551$). In other words, about 55 percent of the variation in the number of live births among rural women can be explained by these eight variables.

The first four variables, i.e., women's age, number of infant deaths, women's age at first marriage, and women's desired number of children, are ranked in descending order according to their effects on fertility. The effect of each of these four variables on the number of live births is statistically significant at the .001 level. Women's education, the place where women usually delivered their babies, and the number of years women had resided in urban areas also affected the number of their live births. This finding was

[2]The correlation matrices for both samples are not presented in this report due to the limitation of space.

TABLE 22
Regression Analysis of the Number of Live Births of Married Women, Rural Areas

Independent Variable	Total Duration of Women's Marriages (years)			
	Below 5	5-9	10 and Above	Total
Standardized (β)				
1 Women's age	1.005*	.465*	.324*	.513*
2 No. of infant deaths	.026	.310*	.371*	.313*
3 Women's age at first marriage	.714*	.404*	.206*	.215*
4 Women's desired no. of children	—	.272*	.181*	.165*
5 Women's education	.211**	.021	.052	.047†
6 No. of years women lived in urban areas	.066	.086	.060†	.043†
7 Women's work experience before marriage	.043	.083	.036	.036
8 Place of usual delivery	.166	.031	.052	.048†
R^2	.057	.363	.379	.551
Unstandardized (b)				
1 Women's age	.950*	.670*	.637*	.856*
2 No. of infant deaths	.076	.682*	.979*	.976
3 Women's age at first marriage	.840*	.638*	.822*	.879*
4 Women's desired no. of children	—	.218*	.266*	.266*
5 Women's education	.597**	.046	.270	.262†
6 No. of years women lived in urban areas	.082	.134	.234†	.176†
7 Women's work experience before marriage	.101	.230	.257	.262
8 Place of usual delivery	.453	.116	.705	.564†
Constant	.656	1.913	2.822	1.547
R^2	.507	.363	.379	.551†

* p = .001.
** p = .01.
† p = .05.
— F-level is too small.

significant at the .001 level. However, these three variables contributed proportionally very little in explaining fertility. Women's work experience had the least influence on the number of their live births. Moreover, the effect of this variable on fertility was not statistically significant. When compared with the other variables, education had a positive effect on the number of live births.

Table 23 presents the effects of the 13 variables on the number of live births of the urban sample. This model was able to explain 62 percent of the variation in the number of live births among urban women. Women's age, their age at first marriage, number of infant deaths, women's practice of FP, and education of women were the variables that accounted for almost all of the variation explained by the model (61 percent out of 62 percent). As indicated by the standardized regression coefficient, women's age was the

TABLE 23
Regression Analysis of the Number of Live Births of Married Women, Urban Areas

Independent Variable	Total Duration of Women's Marriages (years)			
	Below 5	5–9	10 and Above	Total
Standardized (β)				
1 Women's age	.638*	.283	.338*	.519*
2 Women's age at first marriage	.586*	.205	.316*	.319*
3 No. of infant deaths	.115	.240**	.277*	.209*
4 Women's desired no. of children	.172†	.423*	.172*	.171*
5 Women's practice of FP	.413*	.118†	.211*	.171*
6 Women's education	.124	.082	.126**	.080*
7 Women's newspaper reading	.046	.024	.045	.045†
8 Type of husband's employment	.066	.025	.033	.033
9 Women's desire to depend on children in old age	.056	.046	.073†	.033
10 Women's attitude towards FP	.011	.036	.055	.034
11 Women's work experience before marriage	.107	.086	—	.023
12 No. of years women lived in urban areas	.039	.046	.021	.022
13 Women's ethnicity	.028	.030	—	.004
Unstandardized (b)				
1 Women's age	.478*	.347†	.748*	.850*
2 Women's age at first marriage	.100*	.057	.221*	.200*
3 No. of infant deaths	.443	.66**	1.138*	1.084*
4 Women's desired no. of children	.129†	.435*	.929*	0.317*
5 Women's practice of FP	.657*	.298†	1.064*	.874**
6 Women's education	.074	.069	.273**	.156*
7 Women's newspaper reading	.099	.080	.245*	.268†
8 Type of husband's employment	.110	.062	.164	.167
9 Women's desire to depend on children in old age	.098	.121	.386†	.182
10 Women's attitude towards FP	.021	.101	.272	.180
11 Women's work experience before marriage	.172	.203	—	.114
12 No. of years women lived in urban areas	.020	.047	.061	.048
13 Women's ethnicity	.051	.087	—	.023
Constant	1.504	1.202	3.370	2.190
R^2	.406	.323	.442	.617
No. of cases	208	246	672	1126

* p = .001.
** p = .01.
† p = .05.
— F-level is too small.

most influential factor affecting the number of live births, while women's ethnicity had the weakest effect. Age at first marriage, number of infant deaths, desired number of children, and practice of FP all had statistically significant ($p = .001$) effects on the number of live births. The effects of education and newspaper reading on the number of live births, even though seemingly not very strong, were also statistically significant. Women's age, number of infant deaths, desired number of children, practice of FP, desire to depend on children in old age, number of years lived in urban areas, and ethnicity of women had positive effects on the number of live births. In other words, an increase in these factors increases the number of live births. In contrast, the following variables tend to reduce the number of live births among urban women: age at first marriage, education, newspaper reading, attitude towards FP, type of husband's employment, and work experience before marriage. Increases in these factors decrease the number of live births of urban women.

SUMMARY OF FINDINGS

The following is a summary of the major findings revealed by the descriptive analysis. (See Table 24 for details.)

1. Urban women have lower fertility than rural women.
2. The majority of the independent variables hardly affected the number of live births of women who had been married for less than five years. The effects of the independent variables on the number of live births were more perceivable among women who had been married for five years or more.
3. Most of the study's hypotheses were generally supported or confirmed by the results of the descriptive analysis.
4. Most of the independent variables pertaining to the urban sample were significantly related to the number of live births (gamma = 0.15 or more). On the other hand, less than half of the independent variables pertaining to the rural sample were significantly related to the number of live births.
5. The partial relationships were generally similar to the original ones when the data were controlled for the total duration of women's marriages.

TABLE 24
Summary of the Relationships Between the Number of Live Births and the Independent Variables, Rural and Urban Areas

	Independent Variable	Rural	Urban
I	Socio-Demographic and Economic Backgrounds		
	1 Age	†(.64)	†(.56)
	2 Duration of marriage	†(.77)	†(.74)
	3 Age at first marriage	†(.18)	†(.30)
	3.1 Woman's and husband's ages at first marriage (combined)	††	††
	4 Education	†(.41)	†(.46)
	4.1 Women's and husband's education (combined)	††	††
	5 Ethnicity	**	†(.21)
	6 Place of birth	**	*
	7 No. of years women lived in urban areas	†(.23)	†(.41)

TABLE 24 (Continued)
Summary of the Relationships Between the Number of Live Births and the Independent Variables, Rural and Urban Areas

	Independent Variable	Rural	Urban
	8 Type of husband's occupation	*	*
	9 Type of husband's employment	*	† (.27)
	10 Income	*	U
	11 Possession of modern items	*	U
	12 Material possession score	*	U
	13 Socio-economic status	*	*
II	Infant Mortality		
	14 Infant deaths	† (.59)	† (.70)
III	Women's Labor Force Participation		
	15 Work experience before marriage	† (.19)	† (.26)
	16 Work experience after marriage	**	**
	16.1 Work experience before and after marriage (combined)	††	††
	16.2 Work experience before and after marriage and place of work (combined)	††	††
	16.3 Work experience before and after marriage and education (combined)	††	††
IV	Occupational Mobility		
	17 Husband's occupational changes	**	U
V	Modernity		
	18 Knowledge of contraceptive methods	*	*
	19 Attitude towards FP (indirect question)	**	† (.22)
	20 Attitude towards FP (direct question)	U	† (.28)
	21 Husband's attitude towards FP	**	† (.33)
	22 Talking about FP with husband	*	*
	23 Desired place of delivery of baby	† (.24)	U
	24 Desired person to deliver baby	† (.17)	U
	25 Usual place of babies' delivery	† (.66)	U
	26 Person who usually delivered babies	† (.25)	U
	27 Mate selection for daughter	*	U
	28 Newspaper reading	U	† (.32)
	29 Listening to the radio	U	† (.19)
VI	Attitude Towards Specific Number of Children		
	30 Husband's attitude towards having two children	**	**
	31 Husband's attitude towards having five or more children	**	**
VII	Attitude Towards Old Age Security		
	32 Desire to depend on children in old age	U	† (.16)

TABLE 24 (Continued)
Summary of the Relationships Between the Number of Live Births and the Indepedent Variables, Rural and Urban Areas

	Independent Variables	Rural	Urban
VIII	Desired Family Size		
	33 Desired no. of children	† (.40)	† (.53)
IX	Contraceptive Practice		
	34 Contraceptive practice	**	† (.29)

Note: All variables refer to women's characteristics or responses, unless otherwise specified.

Number in parentheses is the gamma value of the relationship between the number of live births and the independent variable.

U = Data unavailable.
* Not in direction predicted, not significant (gamma value < 0.15).
** In direction predicted, but not significant.
† In direction predicted, and significant (gamma value ≥ 0.15).
†† In direction predicted.

The following are the major findings of the regression analysis. (See Table 25 for details.)

1. The regression model of the rural sample showed that women's age, women's age at first marriage, number of infant deaths, and women's desired number of children were the most important variables in determining fertility. Other variables, i.e., women's education, length of residence in urban areas, place of usual delivery of babies, were significantly related to the number of live births but did not contribute very much to explaining the variation in fertility. It is interesting to note that it was mainly the variables from background factors which significantly affected women's fertility.
2. As in the rural sample, women's age, women's age at first marriage, number of infant deaths, and women's desired number of children were found to be important variables in determining fertility in the urban sample. However, two additional variables — women's practice of contraception and women's education — became important variables in the urban sample. Finally, background variables were as influential on the fertility of urban women as they were on the fertility of rural women.

POLICY IMPLICATIONS

One of the major concerns of the Thai government is how to further decrease fertility levels. In order to achieve this, the government has been implementing FP programs intensively in both rural and urban areas. By comparing the results of the surveys in 1969, 1970, 1972, 1975, 1978, and 1979, it was found that in the last decade Thai fertility levels had fallen by 40 percent, one of the sharpest declines on record. The decrease occurred in both rural and urban areas. These changes were accompanied by dramatic increases in contraceptive knowledge and use, but not by changes in the socio-demographic and economic structures, such as age at first marriage, desired number of children, and occupation composition (Knodel and Nibhon Debavalya, 1978 and 1970). In the future, however, the effectiveness of FP programs may reach its peak. Additional strategies should, therefore, be devised to supplement these programs.

Since this study has revealed that women's age at first marriage, infant mortality, and women's desired number of children were the most important variables in determining

TABLE 25
Summary of the Relationships Between the Number of Live Births and the Independent Variables by Total Duration of Women's Marriages, Rural and Urban Areas

Independent Variable	Total Duration of Women's Marriages (years)			Total
	Below 5	5-9	10 and Above	
Rural				
1 Women's age	*	*	*	*
2 No. of infant deaths		*	*	*
3 Women's age at first marriage	*	*	*	*
4 Women's desired no. of children	N.S.	*	*	*
5 Women's education	N.S.	N.S.	N.S.	†
6 No. of years women lived in urban areas	N.S.	N.S.	†	†
7 Women's work experience before marriage	N.S.	N.S.	N.S.	N.S.
8 Place of usual delivery	N.S.	N.S.	N.S.	†
Urban				
1 Women's age	*	†	*	*
2 No. of infant deaths	N.S.	**	*	*
3 Women's age at first marriage	*	N.S.	*	*
4 Women's desired no. of children	†	*	*	*
5 Women's education	N.S.	N.S.	**	*
6 No. of years women lived in urban areas	N.S.	N.S.	N.S.	N.S.
7 Women's work experience before marriage	N.S.	N.S.	N.S.	N.S.
8 Women's newspaper reading	N.S.	N.S.	N.S.	†
9 Husband's type of employment	N.S.	N.S.	N.S.	N.S.
10 Women's desire to depend on children in old age	N.S.	N.S.	†	N.S.
11 Women's attitude towards FP	N.S.	N.S.	N.S.	N.S.
12 No. of years women lived in urban areas	N.S.	N.S.	N.S.	N.S.
13 Women's ethnicity	N.S.	N.S.	N.S.	N.S.

N.S. = Not significant.
* p = .001.
** p = .01.
† p = .05.

the fertility of Thai women, special attention should be given to these factors. More specifically, the following strategies may be carried out.

1. Legal age at marriage should be raised. Even if this move may not be effective in the short run, it may eventually establish marriage at a later age as the norm.
2. The norm of smaller families, i.e., only two children, should be emphasized and a campaign on the benefits of having only two children should be implemented.

3. The government should provide better health care to people in the rural areas so that children in these areas have better chances of survival. In this way, the tendency for parents to replace lost children can be curbed.
4. More benefits — social, as well as economic — should be given to women who participate in non-familial activities. These benefits may include more opportunities to participate in economic activities or to pursue higher education like Thai men do.
5. Finally, since it is the women who have been married for less than five years who tend to have a higher number of live births, special interest should be paid to this group. They can be encouraged, through family planning methods, to space their children throughout their childbearing years.

SECTION II

Population Mobility

DETERMINANTS AND CONSEQUENCES OF RURAL TO URBAN MIGRATION: A STUDY OF 1972 CEBU CITY MIGRANTS

Antonieta Ig. E. Zablan

Migration is a widespread phenomenon. It is used by man as an adjustment mechanism as he relates himself to his environment. Man, in his day-to-day living, has to fashion out modes of gaining economic control over his environment, an activity necessary for his continued existence. If he loses economic control over one area, he starts to move to others which hold promise of economic betterment for him. In the Philippines, for example, 14.5 percent of the total population, or more than five million people, changed their residences between 1960 and 1970. One half of these moves were long-distance migration, i.e., they involved crossing of regional boundaries (National Census and Statistics Office [NCSO] 1974).

The cities in particular, with their industries and wage-labor markets, tend to lure the rural folks. For the latter, the city means a place of many opportunities. For the majority, it is a place for economic fulfillment; for a lesser number, it is a place where they can escape from the hard manual labor and monotony associated with rural living. From the standpoint of the urban center, net internal migration is one component of its growth. The latest statistics compiled by the Population Institute of the University of the Philippines (UPPI) show that, between 1960 and 1970, approximately one and a half million people moved from rural into urban areas (UPPI 1975).

Bogue (1959) has outlined the positive functions of internal migration. To him internal migration is a necessary element of normal population adjustment and equilibrium. By siphoning off excess population to areas of better opportunity, internal migration is a process of personal adjustment for a citizen. It is also an arrangement for making maximum use of persons with special qualifications. It moves these specialists to communities where their services can be used most effectively. Finally, internal migration is an instrument for cultural diffusion and social integration (Bogue 1959: 486–488). However, migration often also accounts for an increase of problems related to social disorganization that a migrant sometimes undergoes in the process of moving into a different cultural milieu (Bogue 1959: 486–488). The rural to urban type of migration performs a dual function: it serves the economic welfare of the migrating ruralite, and it helps the cities to maintain growth rates which are above that of the country as a whole.

Urban centers in newly developing countries function as magnets for the national population. While this is a necessary and often beneficial function, cities tend to attract migrants in numbers generally far above their capacities to employ, house, feed, service, and educate (Breese 1966: 43). Cebu City seems to be no exception to this rule. It has been estimated that, during the year 1972, some 20,000 migrants entered Cebu City, of which 30 percent came from rural areas (Flieger and Koppin n.d.: 250, 269). The influx of people to cities creates demographic, social, and personal problems.

Since migration tends to be age-sex selective (Pascual 1969: 68), it increases the size of particular age groups more than that of others and affects the numerical balance between males and females of the city population. In order to accommodate the migrants

decently, the city has to have extensive housing programs and to expand its water, electricity, and communication facilities. In addition, its economy has to be sufficiently strong to absorb accumulating manpower.

Besides the problem which migration creates for the city, another set of problems is encountered by the rural migrants in their attempts to adjust to the city environment. First, most of them do not possess the skills and the training which the city economy needs. Second, they find themselves deprived of the security and control which the kinship-oriented social organization of their *barrio* offered. They have to get accustomed to a formal, impersonal, specialized, and achievement-oriented life style. Third, they come to the city with hopes for a better livelihood which often have few chances of being realized.

OBJECTIVES AND HYPOTHESES OF THE STUDY

This study investigated the following problems: (1) why people move to Cebu City; (2) the mechanics of migration to Cebu City, which include the reasons for migrating and facilitating factors as well as impediments; (3) the migrants' processes of adjustment to life in Cebu City, and the problems which they encounter in this process; and (4) the effects migration has on the population and labor force structure of the city.

This study also tested the following hypotheses:

1. Migration to cities results in a highly irregular age structure of the Cebu City population.
2. Cityward migration results in an unbalanced sex ratio of the city population.
3. The primary reason for migrating to Cebu City is economic in nature, i.e., related to employment, like taking a job, looking for a job, job transfer, or starting a business.
4. Other reasons for migration are socio-cultural and psychological in nature. Socio-cultural reasons include education of self or children, family welfare, and marriage-related reasons. Psychological reasons include attraction to urban life, dislike of place of origin, and imitative impulse to migrate.
5. Migrants come to Cebu City because of population pressure in their rural areas of origin.
6. Close family relationships, which are characteristic among Filipinos, function as a deterrent to migration.
7. The presence of and the expected aid from the potential migrants' relatives and friends in Cebu City reinforces the motivation to migrate.
8. Information concerning better livelihood opportunities to be found in Cebu City, which is transmitted to the potential migrants by friends and relatives, facilitates the decision to migrate.
9. Most migrants, upon arrival in their area of destination, are faced with economic, environmental, and socio-cultural problems. Economic problems are related to the finding or looking for a job. Environmental problems include housing and sanitation, and socio-cultural problems arise out of the absence of neighborliness in the city which the migrant feels immediately upon his arrival and during his early stay in his new residence.
10. Many Cebu City migrants will be occupationally dislocated.
11. The absence of neighborliness in the city can be compensated for by widening and emphasizing kinship and friendship ties which go beyond the immediate neighborhood.
12. The migrant's participation in voluntary associations in the neighborhood paves the way for social interaction with old residents which leads to the gradual assimilation of the former to the urban way of life.
13. Integration in the community of destination will be easiest when the community is generally composed of migrants.

IMPORTANCE OF THE STUDY

Along with the advantages which rural-to-urban migration offers the city and the migrants, there are difficulties which it generates for both. As already mentioned, the difficulty for the city lies in its limited absorbing capacity. More often than not, the city's housing, water, electricity, and communication facilities are not sufficient to serve a rapidly growing population. In addition, there are not enough jobs which can absorb the migrants, or the latter do not possess the skills and the training which the available jobs in the city require. Consequently, there is a tendency for migrants to obtain marginal jobs in the service occupations which often do not pay enough to sustain a decent living. This situation forces many migrants to settle in slum areas, where the cost of living is relatively low. A report on the world social situation issued by the United Nations Secretariat pointed out, "A large part of the urbanization of the underdeveloped world represents at present a little more than the transfer, through migration, of rural poverty into the cities where it often becomes concentrated and conspicuous in squatter settlements" (Dwyer n.d.: 152). This is a problem for both the city and the migrant.

Other difficulties encountered by migrants are rooted in the need to adjust to an entirely new environment. A shift to a strikingly different way of life, from a rural environment to an urban atmosphere, obviously requires some degree of behavioral change. A ruralite is not used to the impersonal urbanite, and the former is at a loss, not knowing where to turn to when he is in difficulty. In his rural area of origin, he had his family and kin to back him up in all his endeavors.

To regulate the flow of migrants, to help them in their endeavors to adjust to a new environment, and to provide them with decent living facilities and job opportunities are processes which are in need of planning and policy formulation. This study is an attempt to point out some areas in which such planning and policies are needed.

RELATIONSHIP TO EXISTING RESEARCH AND LITERATURE ON MIGRATION

To date, little research has been undertaken by Filipinos in the Philippines which extensively looks into the causes and effects of rural-to-urban migration from the migrant's viewpoint. Researches on migration have mostly been incorporated into larger studies dealing with socio-cultural change, in particular urbanization and agricultural growth (Lopez and Hollnsteiner 1964: 2). The subject, however, has found more attention elsewhere.

Borowski, in his study on migration, outlined the different push and pull factors which affected migration in Poland (Borowski 1967: 550–551). Jung Joo Yoon, in his study of motives of migration to Seoul, Korea, outlined economic, socio-cultural, and psychological reasons (Shryock 1969). Kuroda, in Japan, advanced the idea that the flow of people is towards areas where abundant employment opportunities exist (Kuroda 1967: 504). A similar study, conducted by Mortara on rural-to-urban migration in Latin America, concluded that the decision to leave the rural area for the city was in most cases a product of a number of converging motives whose relative weights the migrant himself could not determine even if he could distinguish them (Mortara 1967: 512). Overall, studies on the cases of migration commonly mention economic, socio-cultural, and psychological-related reasons with economic reasons as the primary one. Studies have revealed that rural-to-urban migration brings about economic, social, and environmental problems which are clearly evident during the initial stay of the in-migrant in the place of destination (Barclay 1958; Prothero 1967; Perevedentser 1969).

In the Philippines, migration has mostly been studied on the national level using census or national survey data. Studies dealing with migration streams, movement modifiers, and differentials (using as variables sex, age, marital status) have been executed by Pascual (1969), Concepcion (n.d.), and Zosa (1973). A study dealing with

differences in fertility levels between the Manila migrant and native populations, using national survey data was undertaken by Hendershot (1968). A study on the volume and direction of migration as well as the birth and death trends on the regional level, particularly the Eastern Visayas, was completed by Flieger and Koppin. Using the data of the Sample Vital Registration Project of the National Census and Statistics Office for the years 1971 and 1972, their study looked into the origins and destinations of migrants and their characteristics (Flieger and Koppin n.d.).

Streams of rural-to-urban migration studied from the place-of-origin viewpoint and using special surveys and historical records were identified by Hart (1971) as moving towards the Mindanao and Sulu regions. Migration studies using the rural place of destination perspective were executed by Simkins and Wernstedt (1971). They postulated that the maintenance of a migration stream is largely determined by informational and aid links between actual and potential migrants. A follow-up study to this, undertaken by Hackenberg (n.d.), gives some insights into the adjustment processes of migrants into a basically agricultural area of destination. Hackenberg advanced the idea that migration can be a mechanism for economic adjustment in the form of *adaptive radiation,* which he conceived as a kind of selective autonomous migration through which the agricultural area of destination will have a substantial contribution to the modernization and eventual urban-industrial development of Southeast Asia.

A study dealing with the causes of migration into Cagayan de Oro City and using data collected through the dual records system established by the Mindanao Center for Population Studies pointed out that the bulk of the city migrants were aged 15 to 24, and that their major reasons for moving into the city were related to employment (Cabaraban et al. 1975). Studies on urbanization which looked into the migrant's adjustment processes were those made on squatter communities (Stone and Marcella 1968; Lacquian 1968; Hollnsteiner 1971; Poethig 1971). Research conducted by Liu and Siok-Hue Yu (1968) among lower-class Cebuano families found that rural migration to Cebu City, to a certain degree, resulted in the emergence of counter effects which made it possible to have folk solidarity amidst an urban existence (Liu and Yu 1968: 114). So far, only one study has been conducted in the Philippines which dwells primarily on the processes of the rural migrant adaptation to urban living. This is the study of migrant adaptation to Manila residence recently completed by Lopez and Hollnsteiner (1974). The study revealed that the problems which the rural migrants experienced in Manila were basically economic in nature. Despite such economic difficulties, the migrants chose to continue living in the city. Among the adjustment mechanisms which they employed were availing of credit, reliance on kin, friends or neighbors in times of crises, and adopting saving techniques in the utilization of goods and services.

SELECTION OF SAMPLE POPULATION

The present study made use of information on migrants collected in 1973 by the Sample Vital Registration Project of the National Census and Statistics Office of the Philippines (NCSO) in the sample enumeration districts (EDs) of Cebu City.

The Sample Vital Registration System was a project which gathered information on vital events, i.e., births, deaths, in-migrants and out-migrants, in the ten regions of the Philippines from 1970 to 1975 (Mijares n.d.: 1-45). The sample population, separate for each region, was determined by using a stratified sampling scheme. The crude birth and death rates estimated from registered events through the years 1960-1969 were the bases for stratification. Stratum V consisted of all chartered cities in the region, and the largest city was deliberately chosen as the sample city. Cebu City represented Stratum V of Region VIII.[1] The Sample Vital Registration System gathered vital events from 21 EDs

[1]Region VIII includes Negros Oriental, Cebu, Bohol, Leyte, and Samar.

distributed over the entire city of Cebu. The population living in these EDs represented ten percent of the city's population.

In 1972, the project covered approximately 3,000 households (enumerated in January 1973), of which some 600 contained migrants who had come from rural areas and who were still present in Cebu City in March 1974. Of these households, 141 were migrant household heads and 517 were migrants (individual migrants) who lived in old resident households. The 141 heads of migratory households comprised about 22 percent of the migrants found in the sample EDs of Cebu City. The 517 individual migrants comprised 78 percent.

For purposes of the present study, a subsample of 300 was drawn from all migrants in the NCSO sample households. The subsample was divided into heads of migratory households and individual migrants, according to the proportion of such migrants found in all sample households, i.e., 22 percent and 78 percent respectively. The respondents used in the present study were selected randomly from all EDs. The number of respondents drawn for each ED was proportionate to the number of all NCSO sample households residing in the particular ED. Thus, the subsample population used for this study consisted of 64 heads of migratory households and 236 individual migrants.

In-depth information from the subsample population was collected with the help of a structured questionnaire, which contained pre-coded as well as open-ended questions printed in both English and Cebuano. Data gathered from the subsample population were used to analyze aspects of migration like migration mechanics and adjustment processes of migrants. In studying the demographic impact of immigration to the city, data for all migrants found in the 1972 NCSO sample for Cebu City were used.

DATA ANALYSIS

As indicated by its four objectives, this study focuses on the causes and effects of rural migration into Cebu City. The causes of migration were analyzed on the objective and subjective levels. The objective level of analysis was based on the examination of the magnitude of population pressure in the areas of origin of the sample farmer migrants and their degree of economic sufficiency; the subjective level of analysis made use of the migrants' reasons for moving. The two levels of analysis reinforced each other in explaining the causes of rural migration into Cebu City. The effects of rural migration into Cebu City were likewise studied at two levels — their implications for the personal lives of the migrants and their total impact on the population and labor force structure as well as the ecology of Cebu City. Data were analyzed separately for individual migrants and heads of migratory households. This was done to detect whether or not the data would yield substantial differences between the migrants' respective motives for migration, the effects of the influencing factors on the decision to migrate, and the mechanisms employed for coping with the difficulties encountered in the city.

FINDINGS OF THE STUDY

At the time of the 1970 Census, the province of Cebu had more than 1.6 million people. Since 1960, 72,600 had migrated into the province and more than 80,000 had changed their municipalities of residence within the province in the same period of time. Most of these migrants had moved into the area of Metropolitan Cebu City (NCSO 1975).[2] What Census statistics did not show is why Filipinos move. This section outlines and analyzes the reasons 300 migrants who had come to Cebu City in 1972 gave when asked what prompted them to leave their old residences in favor of living in the city.[3]

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[2]The exact number of migrants to Metropolitan Cebu is not known.

[3]A migrant may be a household or persons within the household who moved into their present residence for a period of six months or more without expecting to leave or return (Manual of Operations on Survey of Population Change, p. 16).

Land Pressure

Pascual has hypothesized that reasons for migration in the Philippines include population pressure at place of origin and higher living standards at place of destination. She cited as an example the population of the Ilocos Region, where many families were forced to seek new livelihood opportunities in the neighboring and largely unsettled provinces of Isabela, Nueva Vizcaya, and Mountain Province (Pascual 1969: 64).

Population pressure at areas of origin can be expected to be the least perceived reason by the Cebu City migrants. This is so because population pressure is an abstraction of reality. Analysis of population pressure is usually done on the objective level through inference from known and objective facts. In this study, indicators were employed to measure the existence of population pressure in the areas of origin of the sample migrants. The first indicator was the size of farm land or, where tenant farmers were concerned, the tenant's share of the harvest from that land. The second index used was the ratio of the total rural population to the total area of arable land for the sample migrant's municipality of origin. Since the indices used are both related to farm size, only farmer respondents (those who had farming as their occupation in the area of origin) were selected and subjected to the two measures of population pressure.

The first measure could have been refined if the monetary return of the farm products had been ascertained. However, most respondents failed to supply the necessary information. To the question of how much they had produced, 66 percent responded "for consumption only" while the remaining 34 percent gave no information at all. Neither was the income imputable since the farmers could not clearly define nor approximate their total harvest by crop, by their share, and by their respective cost price. Had income in pesos been obtained, it would have been easier to directly measure the population-carrying capacity of the area of origin, which is a more refined index of population pressure.

The second index used was the ratio of the total rural population to the total arable land area for municipality of origin. The rural population used was the one recorded by the 1970 Census of Population and Housing, while the data on arable land were obtained from the Agricultural Census of 1960. Assuming that area of arable land in 1970 was approximately the same as it was in 1960, the number of rural people per square kilometer of arable land in 1970 was computed for every sample migrant's municipality of origin.

In order to obtain a standard in considering which area had relatively high or low land pressure, the average national man-land ratio was used. This ratio is 613 rural people per square kilometer of arable land. Any area whose ratio exceeded this number was considered a high pressure area, any smaller ratio was indicative of the absence of land pressure.

Size of farm land by share of harvest

Of the sample population of 300, 250 had been farmers in their areas of origin. They had come to Cebu City from 41 different municipalities located in ten provinces within the Visayas and Mindanao. Table 1, which gives a breakdown of these farmers by type of farm ownership and size of farm, indicates that the majority (56 percent) had been farm tenants only, 24 percent absentee landlords, and only 20 percent owners or part owners of the farms which they cultivated.

One half of all absentee landlords (6 out of 12) had farms the size of which was three hectares or more. By contrast, of the 28 farm tenants, 8 worked on farms that were less than one hectare in size, and 13 on farms with sizes between one and two hectares; only seven or one fourth worked on farms which were three hectares or more in size.

Including all types of farm ownership, two thirds of all farmer migrants did work on farms of two hectares or less. In addition to the fact that most farms on which the

TABLE 1
Percentage Distribution of Respondents by Type of Farm Ownership, and by Size of Farm in Place of Origin, 1972

Size of Farm in Place of Origin	Type of Farm Ownership in Area or Origin			
	Farm Owner Not Working on Farm	Farm Owner Working on Farm	Farm Tenant	Farm Owner and Tenant
Less than 1 Hectare				
Individual	0.0	16.8	66.7	16.8
Household head	42.9	0.0	57.1	0.0
All migrants	23.1	7.7	61.5	7.7
1-2 Hectares				
Individual	17.7	5.9	58.8	17.7
Household head	0.0	25.0	75.0	0.0
All migrants	14.3	9.5	61.9	14.3
3-4 Hectares				
Individual	33.3	33.3	33.3	0.0
Household head	16.7	16.7	66.8	0.0
All migrants	25.0	25.0	50.0	0.0
5 Hectares and Above				
Individual	66.7	0.0	33.3	0.0
Household head	100.0	0.0	0.0	0.0
All migrants	75.0	0.0	25.0	0.0
ALL SIZES				
Individual	21.9	12.5	53.1	12.5
Household head	27.8	11.1	61.1	0.0
All migrants	24.0	12.0	56.0	8.0

migrants had worked in their areas of origin were small, three fourths of them (76.2 percent) received only part of their crops as income. In most cases this part amounted to only one half of the entire harvest. This means that more than half of all farmer migrants had to rely for their income on farms only one half of the size as indicated in Table 1. Thus, it is understandable why most of the farmers claimed to have lived on only a subsistence level in their areas of origin. For at least the majority of the farmer migrants then the hypothesis that land pressure, measured in terms of farm income, is related to migration was confirmed by the findings of this study.

Ratio of total rural population to total arable land

The second measurement used, people-to-land ratio, was also found to be related to migration. However, this finding also points to other reasons. The municipalities of origin of the sample farmer respondents are found in the provinces of Cebu, Bohol, Leyte, Southern Leyte, Surigao del Norte, Agusan del Norte, Bukidnon, Misamis Oriental,[4] Zamboanga del Sur, and Davao del Sur.

Looking at the population-to-land ratios of the municipalities of origin (Table 2), those located in Misamis Oriental had the highest pressure, followed by the municipalities in

[4]This is for the municipality of Camiguin, which in 1960 was still a part of Misamis Oriental.

TABLE 2
Ratio of Total Rural Population to Total Arable Land of Municipalities of Origin of Farmer Migrants to Cebu City, 1972

Location of Municipality		No. of Mun. from Which Respondents Originated	No. of Farmer Migrants	Total Arable Land of Mun. of Origin (sq. km.)	Total Rural Population of Mun. of Origin	Ratio for Mun. of Origin (person/sq. km.)
Region	Province					
Central Visayas	Cebu	24	31	558.3	461,440	826.5
	Bohol	4	4	163.1	64,811	397.5
Eastern Visayas	Leyte	4	5	110.6	77,988	705.3
	S. Leyte	3	3	69.1	62,936	910.2
Northern Mindanao	Surigao N.	1	1	4.9	6,665	1,371.4
	Agusan N.	1	1	25.6	12,077	471.2
	Bukidnon	1	1	230.2	36,319	157.8
	Misamis Or.	1	2	4.1	6,481	1,588.5
Western Mindanao	Zamboanga	1	1	48.0	17,243	359.4
Southern Mindanao	Davao Sur	1	1	54.0	30,080	556.8

Surigao del Norte, Southern Leyte, Cebu, and Leyte. Relatively low pressure areas were the municipalities in Bukidnon, Zamboanga del Sur, Bohol, Agusan del Norte, and Davao del Sur. Eighty-four percent of the migrant farmers originated in areas of high pressure (Cebu, Leyte, Southern Leyte, Surigao del Norte, and Misamis Oriental), but not in very high-pressure areas. The latter fact becomes obvious when we consider that the majority of migrants came from the province of Cebu, which ranks only fourth in terms of land pressure. Sixteen percent of all migrant farmers came from relatively low-pressure areas, like Bohol, Bukidnon, Agusan del Sur, and Davao del Sur (Southern Mindanao) (see Table 2).

One thing that would partly explain the inconsistency between the degree of population pressure and the volume of out-migration could be Zosa's hypothesis which states that "internal migration in the Philippines tends to be due more to contiguous and ethnic related backgrounds rather than to differences in socio-economic characteristics" (Zosa 1973: 10). This would apply especially to those migrants coming from the province of Cebu itself, and from Bohol. Geographically, Bohol is located near Cebu City, and the means of transportation and communication between these two areas are fast and convenient.

But, this explanation does not apply to the Mindanao case. A look at the primary reasons for moving into Cebu City of the sample farmer migrants coming from Mindanao shows that 71 percent gave job-related reasons, while the remaining 29 percent cited reasons like education or dislike of place of origin. The job-related reasons were often accompanied by others like marriage and family welfare. One factor that may have motivated the migrants from Mindanao to leave their substantial farms and to look for jobs in Cebu City was the threat posed by the present Christian-Muslim conflict in Mindanao. This means that migrants from high-pressure areas in the Visayas and Mindanao did not migrate to low-pressure areas within Mindanao, which would be the most rational thing to do under normal conditions. Rather, they considered it safer to stay away from troubled areas and to migrate to places outside Mindanao. Cebu City offered itself in terms of favorable distance, fast communication, and easy means of transportation, not to mention the promise of job opportunities.

In view of these observations, it can be concluded that population pressure as a factor for migration is only one among a number of factors. In order to account for the apparent inconsistency between population pressure and actual moves, this study hypothesized that the psycho-social and normative levels of migration analysis have to be considered. More specifically, the individual migrant's subjective reasons for moving and the prevailing cultural conditions which provided the framework for the decision to migrate have to be taken into account (Germani 1964: 161–163).

Reasons for Migration

Kuroda, in his study of migration in Japan, found that the primary motive for migration tends to be economic in nature. He advanced the idea that "the flow of people heads for an area where abundant employment opportunities exist" (Kuroda 1967: 506). The same idea was proposed by Pascual when she stated that the "primary motive for migration in the Philippines is the desire to put oneself at a better earning advantage through relocation" (Pascual 1969: 77).

This desire corresponds to man's desire for a continuous betterment of his economic status in order to meet his material needs which keep growing with the progress of time and civilization. One way of pursuing this end is by searching for new and better methods of tilling the land. However, there are a number of factors which tend to discourage Filipinos from continually depending on the land. Among these factors are: (1) the tenancy system which is often to the disadvantage of the tenant; (2) the diminishing land areas available for cultivation resulting from division of land property

at the time of inheritance; (3) poor soil quality and farm techniques which result in low production; and (4) the low prestige attached to agricultural work. The Filipino wants the certainty of a daily or monthly income which would enable him to live a definite style of life commensurate with his earnings (Pal 1963: 104). The city, as the center of commerce and industry, promises plenty of non-agricultural job opportunities with a definite income. Thus, the primary reason for migrating to Cebu City was hypothesized to be economic in nature, i.e., related to taking a job, job transfer, or starting a business.

Goldstein, in his 1973 study of migration in Bangkok and other urban places in Thailand, hypothesized that in developing countries the attainment of more education by persons in rural places probably leads to a considerable number of them moving to urban places. The limited opportunities for educational achievement in rural areas, particularly beyond the secondary level, may motivate persons to move to an urban setting (Goldstein 1973: 16). Education is highly valued by Filipinos. It is considered a springboard to a well-paid white-collar job. Hart, in his study of rural-to-urban migration in the Philippines, discovered that a small group of young people who out-migrated from Caticugan were students attending high school and college (Hart 1971: 125).

The importance of marriage or joining one's family as a reason for migration was hypothesized because Filipinos love to be with their families. Bulatao, in studying Filipino family ties, stated that "when the ego seeks socio-economic betterment, it does so with and within the framework of the family for fear of extending itself too far, thus exposing the self to danger" (Bulatao 1968: 112).

Hollnsteiner, in her study of urbanization in Metropolitan Manila, pointed out that "Manila, like all other cities, represents to the masses the center of progress and excitement, freedom from the dullness and confining pressures of village or small town life, and advantages which through work and effort will accrue to those in search of them" (Hollnsteiner 1971: 148). Stone and Marcella, in their study of a squatter community in a suburban Manila, reported one respondent as saying, "In the province it is sad and lonely, but in the city life is easy." (Stone and Marcella 1968: 68)

Reasons like attraction to urban life or dislike of place of origin would perhaps be especially true for young unskilled persons, particularly women, who find rural life boring and who venture to the city merely because they are attracted to it. They want to get away from the manual labor they have to render on the farms and stay in the city where they can be in step with the latest fashions so that, upon their return visits, usually during fiestas, they can "show off."

In view of the foregoing observations, it was hypothesized that other reasons for migration are socio-cultural and psychological in nature. Socio-cultural reasons include education of self or children, family welfare, and marriage-related reasons. Psychological reasons include attraction to urban life, dislike of place of origin, and the imitative impulse to migrate.

To test these hypotheses, the migrants were directly asked what their reasons were for moving into Cebu City. After they had listed all their reasons, they were further requested to rank these reasons according to their importance. Their answers were then assigned weights according to the order in which they were mentioned, and then tabulated. Reasons were categorized as job-related, education, marriage, and family welfare-related. Reasons such as dislike of place of origin, imitative impulse to migrate, and attraction to city were summarized as "other reasons."

Job-related reasons

Among the reasons considered as the most important by the migrants themselves, 60 percent were job-related (Table 3). The proportion of job-related reasons was consistently high for all migrants from any place of origin, whether they were individuals

TABLE 3
Percentage Distribution of Respondents by Most Important Reasons for Migrating to Cebu City, and by Type of Migrant, 1972

Reason for Migrating	Type of Migrant		
	Individual	Household Head	All Migrants
Job-related	56.4	73.4	60.0
Education	34.7	4.7	28.3
Marriage	3.4	6.3	4.0
Family welfare	1.3	6.2	2.3
Dislike of place of origin	0.4	6.2	1.7
Imitative impulse	1.7	1.6	1.7
Attraction to city life	0.4	0.0	0.3
Others	1.7	1.6	1.7
TOTAL	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)

or heads of migratory households. However, heads of migratory households were more interested in finding jobs than individual migrants; one third of the latter migrated not for job-related reasons but for education-related ones (see Table 3).

An examination of the migrants' employment status in their areas of origin showed that 60 percent were not engaged in any gainful occupation, 20 percent had non-farm occupations, and another 20 percent had jobs related to farming (see Table 4).

One surprising fact appearing in Table 4 is that of those who had no gainful occupation in their areas of origin, only one half migrated to the city because of job-related reasons. This rather small proportion is explained when we examine individual migrants and heads of migratory households separately. Forty-six percent of the individual migrants moved to the city for reasons of education, while none of the heads of migratory households did so. This seems to indicate that many of the individual migrants who were not engaged in gainful occupations at their areas of origin were not really jobless persons while the heads of migratory households probably were. The same distinction does not hold true for either individual or household migrants who had gainful occupations at the areas of origin. Among the respondents who claimed to have had jobs in their areas of origin (40 percent), a little more than one half had left their jobs in order to seek economic betterment in the city while 16 percent moved to the city because of a job transfer.

The fact that three fifths of all migrants gave job-related reasons as their main motivation for migration attests to the general belief of the rural population that the city offers job opportunities which can improve one's position in life.

Education-related reasons

Education-related reasons as the main motivating force for migration were indicated by 28 percent of all the migrants. The household heads who gave this reason came from Cebu Province only. In general, education as a primary reason for moving into Cebu City was confined to individual migrants only. Most of the people who came to the city to study were not family men. If they were, they did so, in most cases, not for their own education but for the education of their children.

The proximity of the place of origin to the area of destination is one factor which explains why only household heads who lived somewhere in Cebu Province gave this type of reason. Education of children, being highly valued, is one of the primary

TABLE 4
Percentage Distribution of Respondents by Most Important Reasons for Migration to Cebu City, by Occupation in Place of Origin, and by Type of Migrant, 1972

Occupation in Place of Origin	Reason for Migrating				
	Job-related	Marriage-related	Family Welfare	Education-related	Others
Not Engaged in Gainful Occupation					
Individual	46.7	3.6	0.6	46.7	2.4
Household head	71.4	14.3	14.3	0.0	0.0
All migrants	48.6	4.4	1.7	43.1	2.2
Non-farm					
Individual	85.3	0.0	2.9	2.9	8.8
Household head	73.1	0.0	7.7	3.5	15.4
All migrants	80.0	0.0	5.0	3.3	11.7
Farm					
Individual	74.3	5.7	2.9	8.6	8.6
Household head	75.0	8.3	0.0	8.3	8.3
All migrants	74.6	6.8	1.7	8.5	8.5
ALL TYPES					
Individual	56.4	3.4	1.3	34.7	4.2
Household head	73.4	6.2	6.2	4.7	9.4
All migrants	60.0	4.0	2.3	28.3	5.3

concerns of any responsible parent. Because of this, entire families out-migrated to a place where the children could be assured of a better education. Obviously, out-migration of this type is facilitated if the area of destination is near the place of origin. Expenses incurred during the transfer would be relatively small, and the risk is likewise small since one can easily return to one's area of origin. If this hypothesis is correct, the absence of relatively well-equipped institutions of learning in the rural areas, especially on the tertiary level, should be related to this type of migration.

The figures in Table 5 confirm this hypothesis. Only 48 percent of individual migrants who migrated for education-related reasons had a high school situated close to their place of origin, and a mere 26 percent had a college within easy reach. Of the families which migrated, only eight percent had a college in their vicinity.

"Other reasons"

The third most important motive for migration, given by five percent of all migrants, were reasons like dislike of place of origin, attraction to the city, and the imitative impulse to migrate. Most of the respondents who gave these reasons came from Mindanao (see Table 6). The fact that the majority of the respondents who gave these reasons originated from Mindanao supports the statement mentioned earlier, that population pressure is not the only reason why migrants came to Cebu City from Mindanao.

Marriage-related reasons

Of all the respondents, only seven (four percent) moved to Cebu City for marriage-

TABLE 5
Percentage Distribution of Respondents by Type of Schools Accessible in Place of Origin, and by Type of Migrant, 1972

Type of School Accessible to Migrant in Place of Origin	Type of Migrant		
	Individual	Household Head	All Migrants
Elementary School	21.3	58.3	25.5
High School	50.0	33.3	48.1
College	28.7	8.3	26.4
TOTAL	100.0	100.0	100.0
No. of respondents	(94)	(12)	(106)

TABLE 6
Percentage Distribution of Respondents by Most Important Reasons for Migration to Cebu City, by Place of Origin, and by Type of Migrant, 1972

Place of Origin	Most Important Reason for Migration				
	Job-related	Marriage-related	Family Welfare	Education-related	Others
Cebu Province					
Individual	59.7	3.9	2.3	27.9	6.2
Household head	77.1	5.7	5.7	8.6	2.9
All migrants	63.4	4.3	3.0	23.8	5.5
Visayas					
Individual	56.9	4.2	0.0	36.1	2.8
Household head	72.2	11.1	11.1	0.0	5.6
All migrants	60.0	5.6	2.2	28.9	3.3
Mindanao					
Individual	42.9	0.0	0.0	57.1	0.0
Household head	60.0	0.0	0.0	0.0	40.0
All migrants	46.7	0.0	0.0	44.4	8.9
Luzon					
Individual	100.0	0.0	0.0	0.0	0.0
Household head	100.0	0.0	0.0	0.0	0.0
All migrants	100.0	0.0	0.0	0.0	0.0
ALL PLACES					
Individual	56.4	3.4	1.3	34.7	4.2
Household head	73.4	6.2	6.2	4.7	9.4
All migrants	60.0	4.0	2.3	28.3	5.3

related reasons. Of these, four were household heads, and three were individuals. One may find it curious that household heads migrate for such reasons. Perhaps newly-wed couples decided to start their family life in Cebu City where either one or both partners had found, or hoped to find, a job. Or, it may be that the couple decided to reside in Cebu City because one of them was a city resident. All of the respondents who gave marriage-related reasons as motives for migration came from the Visayas region only.

Family welfare-related reasons

The reasons given by the smallest number of respondents as their main motive for migration were family-related. Specific reasons included in this category were looking after children who were in Cebu City, or joining one's family who had come to live in Cebu City. Household heads who named this reason as their primary motive explained that they came to join some of their children, while individual migrants who gave these reasons came to join their families who had settled in Cebu City. Respondents who advanced this reason, like those who gave marrige-related ones, originated from the Visayas only; the majority came from Cebu province (71.4 percent), and the rest (28.6 percent) from other parts of the Visayas. The absence of respondents from Mindanao who gave this kind of reason indirectly points to the importance for migration of the distance between the place of origin and place of destination. Short-distance moves apparently require less urgent motives, while long-distance moves demand more urgent ones, like economic pressure for example (see Table 6).

Reasons for migration and age of migrant

Of the 300 sample migrants, the majority (72.7 percent) were 29 years old or younger, 23.7 percent were 40 to 49 years old, and only about four percent were 50 years or older. Reasons for migration vary with age and type of migrants. Table 7, which shows the breakdown of migrants by age, type, and reason for migration, indicates that among those who came to the city for job-related purposes, the majority (83.2 percent) consisted of individuals aged 29 or below, while a majority of heads of family migrants (59.6 percent) were in the age group of 30 to 49.

Marrige-related reasons were associated with youths, while family-related reasons were prominent among middle-aged persons. The first statement is supported by the fact that all individual migrants and one half of the household heads with marriage-related reasons were aged 29 or below. Overall, a little more than four fifths (83.3 percent) of all migrants who cited marriage-related reasons were in this age category. None of them were aged 50 or above. The second observation is made obvious by the fact that a majority of the individuals (66.8 percent) and one half of the household heads who came to Cebu City for family-related reasons, were in the 30 to 49 age group.

Education-related reasons were correlated with youth insofar as individual migrants were concerned, and with middle age in the case of household heads. Ninety-five percent of individuals who gave education-related reasons were in the 29 and younger age group, and only five percent of them were aged 30 to 49. Two thirds of the household heads were aged 30 to 49, and one third were 50 years old and above. A similar relationship was earlier observed between age of migrants and job-related reasons.

Reasons for migration and sex of individual migrants

Table 8 indicates that, among the young individual migrants (29 years of age and below) who came to the city for job-related reasons, there were more females than males (87.4 percent and 70 percent, respectively). Conversely, there were more males than females (30 percent and 12.6 percent, respectively) among the older migrants (30 to 49 years of age).

Among those who migrated for marriage-related reasons, the females outnumbered

TABLE 7
Percentage Distribution of Respondents by Most Important Reasons for Migration, by Age, and by Type of Migrant, 1972

Most Important Reason for Migration	Age Group		
	10–29	30–49	50 and Above
Job-related			
Individual	83.2	16.8	0.0
Household head	25.5	59.6	14.9
All migrants	67.4	28.5	4.1
Marriage-related			
Individual	100.0	0.0	0.0
Household head	50.0	50.0	0.0
All migrants	83.3	16.7	0.0
Family Welfare			
Individual	0.0	66.7	33.3
Household head	50.0	50.0	0.0
All migrants	28.6	57.1	14.3
Education-related			
Individual	95.3	4.7	0.0
Household head	0.0	60.7	33.3
All migrants	92.0	6.8	1.2
Others			
Individual	60.0	33.3	6.7
Household head	0.0	83.3	16.7
All migrants	42.9	47.6	9.5
ALL REASONS			
Individual	85.6	13.6	0.8
Household head	25.0	60.9	14.1
All migrants	72.7	23.7	3.6

the males. This is probably so because most Filipino wives follow their husbands, and Cebu City is the place where the husband, who in most instances is the breadwinner, either has a job or hopes to find one.

All of the individual migrants who came to city for family welfare-related reasons were females 30 years of age or older. Two thirds of them were 30 to 49 years old, and one third were in the 50 and above age category. They were mostly wives who had came to the city to join their husbands. Most individual migrants who came to the city for education-related reasons were 29 years old or younger.

Comparing the proportions of males and females who had come to the city for job- and education-related reasons, it is seen that females outnumbered males in the first category. By contrast, the proportion of males who came to the city to study was higher than the proportion of females. This would seem to indicate that males have higher educational aspirations than females. This may be due partly to the tendency of rural parents to give priority to their male children as far as education is concerned. This preference probably stems from the stereotype which assigns men the role of breadwinner.

TABLE 8
Percentage Distribution of Respondents by Most Important Reasons for Migration, by Age, and by Sex of Individual Migrants, 1972

Most Important Reason for Migration	Age Group					
	10–29		30–49		50 and Above	
	Males	Females	Males	Females	Males	Females
Job-related	70.0	87.4	30.0	12.6	0.0	0.0
Marriage-related	100.0	100.0	0.0	0.0	0.0	0.0
Family welfare	0.0	0.0	0.0	66.7	0.0	33.3
Education-related	100.0	93.1	0.0	6.9	0.0	0.0
Others	66.7	58.3	33.3	33.3	0.0	8.8
ALL REASONS	83.6	86.3	16.4	12.6	0.0	1.1

Table 9 shows that a majority of the female individual migrants were engaged in service occupations requiring relatively little skill, but that most male migrants were in occupations requiring specialized know-how. Only 42.3 percent of the males had occupations categorized as being of low status, but 80.8 percent of the females were in occupations of this type. The majority of the males (53.3 percent) had occupations of middle level status, compared to only 19.1 percent of the females. Whereas no female migrants were on the upper occupational level, three percent of the males were found there. This finding indicates that female migrants who participate in the city's labor force occupy the lowest rung of the occupational ladder, while male migrants tend to be found on the middle and upper levels.

FACTORS INFLUENCING THE DECISION TO MIGRATE

The causes of migration analyzed in the preceding section do not operate independently. There are certain attitudes and behavior patterns prevalent in society that may either facilitate or impede its members' decision to migrate (Germani 1964: 161). This section probes into some of these factors and their influence on rural migrants to Cebu City.

TABLE 9
Percentage Distribution of Respondents by Type of Present Occupation, and by Sex of Individual Migrant Who Came to Cebu City for Job-related Reasons, 1972

Present Occupation	Male	Female	Both Sexes
Professional	3.3	0.0	0.8
Sales work	13.3	12.8	12.9
Skilled work	40.0	6.4	14.5
Clerical and related	0.0	0.0	0.0
Service	26.7	80.8	67.7
Non-farm unskilled	10.0	0.0	2.4
Extractive	3.3	0.0	0.8
Others	3.3	0.0	0.8
TOTAL	100.0	100.0	100.0
No. of respondents	(130)	(94)	(124)

The Family's Influence on the Decision to Migrate

Simkins and Wernstedt have shown that in the Philippines, where family ties tend to bc strong, emigration from home is accepted only reluctantly (1971: 76). Studies by Maceda (1967) and Lapuz (1967) underscored this idea. The former commented that the high degree of family coherence makes it difficult for a person to leave his/her relatives and look for a job elsewhere (Maceda 1967: 70), while the latter pointed out that "When it comes to aggressiveness, the Filipino, especially in the rural areas, is much like a child full of fears and self-doubt. Within his family he is protected and sheltered, this is the only economic security he knows, however meager it is" (Lapuz 1967: 112). Based on these observations, it was hypothesized that close family relationships, which are characteristic of Filipinos, function as a deterrent to migration.

To measure the "degree of closeness of family ties," the following questions were asked of the respondents in this study: (1) Did they go to their immediate families or relatives for financial aid when they were still in their places of origin? (2) Did they seek advice from their immediate families or relatives in their places of origin? (3) Did migrants expect to receive, or were they, at any time, receiving help from their immediate families or relatives still living in their places of origin now that they were in the city? and (4) Did they communicate with their families while living in the city? From the responses to these four questions a scale of "closeness to family and relatives" was established with the following codes: (1) very close, if the migrant answered "yes" to all or at least three of the questions, (2) close, if he answered "yes" to only two questions, and (3) distant, if he answered "yes" to only one question, or "no" to all questions.

"Agreement or disagreement of families and relatives with the migrants' decision to migrate" was measured by establishing an "attitudinal score." The migrant was asked about his family members' reaction to his intention to migrate to Cebu City, and an arbitrary number was assigned to every reaction, one for agreement, and zero for disagreement. The aggregate score for the entire family's reaction was then computed as follows:

$$\frac{\text{sum of scores obtained from all family members questioned}}{\text{number of family members questioned}}$$

The aggregate score determined the degree of agreement or disagreement of the whole family, i.e., a score of one indicated that the entire family agreed, while a score of zero indicated that the entire family disagreed with the migrant's decision to move to Cebu City.

A cross-tabulation of the migrants' degree of closeness to their families and the latter's reactions to their intentions to migrate to Cebu City is shown in Table 10. The figures indicate that the families' reaction to the migrants' decision to leave their areas of origin did not vary much with the migrants' closeness to their families. Contrary to what was expected, very few migrants (five percent) reported that their families had disapproved of their decision to move to Cebu City. Most of them (92.6 percent) did not experience any family conflict at all.

This finding suggests a very minimal deterring effect of close family relationships on the migrant's intention to migrate. The figures seem to indicate instead that the families did influence the potential migrants positively. The latter statement is supported by the proportion of migrants who were encouraged by their families to move. As illustrated in Table 11, of the 281 migrants whose intention to migrate was approved by their families, three fourths were positively encouraged to do so. The primary reason for positive encouragement was the presence of educational and job opportunities in Cebu City (see Table 12).

TABLE 10
Percentage Distribution of Respondents by Their Family's Reaction to Their Decision to Move to Cebu City, by Migrant's Closeness to Family, and by Type of Migrant, 1972

Respondent's Closeness to His/Her Family	Family's Reaction to Respondents Decision to Migrate		Total	
	Agree	Disagree		
Very Close				
Individual	98.7	1.3	100.0	(78)
Household head	88.2	11.8	100.0	(17)
All migrants	96.8	3.2	100.0	(95)
Close				
Individual	94.2	5.8	100.0	(140)
Household head	97.4	2.6	100.0	(39)
All migrants	95.0	5.0	100.0	(179)
Distant				
Individual	87.5	12.5	100.0	(16)
Household head	83.3	16.7	100.0	(6)
All migrants	86.4	13.6	100.0	(22)
ALL DEGREES OF CLOSENESS				
Individual	95.3	4.7	100.0	(234)
Household head	93.6	6.4	100.0	(62)
All migrants	94.9	5.1	100.0	(296)

TABLE 11
Percentage Distribution of Respondents Who Received Approval of Their Families to Migrate to Cebu City, by Type of Approval, and by Type of Migrant, 1972

Type of Approval	Type of Migrant		
	Individual	Household Head	All Migrants
Positive encouragement	71.7	75.0	72.4
No positive encouragement	27.0	25.0	26.5
No response	1.3	0.0	1.1
TOTAL	100.0	100.0	100.0
No. of respondents	(233)	(58)	(281)

TABLE 12
Percentage Distribution of Respondents by Reasons for Family Encouragement to Migrate to Cebu City, by Type of Approval, and by Type of Migrant, 1972

Reason for Encouragement	Type of Migrant		
	Individual	Household Head	All Migrants
Educational opportunities	38.1	4.4	30.7
Job opportunities	29.4	42.2	32.2
For the good of the family	21.9	17.8	21.0
Near the area of origin	1.2	4.4	1.9
Others	8.8	31.1	13.7
No response	0.6	0.0	0.5
TOTAL	100.0	100.0	100.0
No. of respondents	(160)	(45)	(205)

One difference noted between the two types of migrants concerning the reasons why their families encouraged them to migrate is the fact that, for the individuals, the presence of educational facilities ranked first, and availability of jobs ranked second; in the case of heads of migratory households, the opposite was true. This pattern is consistent with the difference in motives for migration mentioned previously. A third major reason for encouraging migration was family welfare, which could mean either for the economic welfare of the migrating individuals' families in the place of origin or for the economic welfare of the migrating households. Among the very few (15) migrants whose decision to leave their places of origin was disapproved by their families, 75 percent were individual migrants, and only one fourth were household migrants. Individuals were discouraged mostly for moral reasons, i.e., the migrant was either a girl or too young for city life, but also for reasons related to family solidarity. Two migratory households were discouraged because of the high cost of living in Cebu City and also for moral reasons (see Tables 13 and 14).

The fact that the proportion of migrants who had come to Cebu City against the expressed wishes of their families was relatively small and the proportion of those who came with positive endorsements was overwhelmingly large seem to indicate two points. First, it is not family "ties" but family "permission" (which apparently is unrelated to family closeness) which is a deterring factor for migration. Second, migration is not so much an individual decision but a family one. These conclusions do not entirely contradict the hypothesis mentioned earlier, namely, that family relationships function as a deterrent to migration. They do so only if the family does not want a member to leave. Relatives serve as a supporting factor whenever the family considers moving advantageous, not necessarily for the mover himself/herself, but also for the family's own status.[5]

The Influence of Relatives Living in the Area of Destination on the Decision to Migrate

From their study of migrants to the Digos-Padada Valley, Simkins and Wernstedt theorized that the maintenance of a migration stream is largely determined by

[5]This study did not expressly inquire into advantages which relatives in place of origin expect for themselves from the migration of one or more of their members. The above statement is not offered as a conclusion, but a suggestion which is in need of further investigation.

TABLE 13
Percentage Distribution of Respondents Who Received Disapproval from Their Families to Migrate to Cebu City, by Type of Disapproval, and by Type of Migrant, 1972

Type of Disapproval	Type of Migrant		
	Individual	Household Head	All Migrants
Positively discouraged	90.0	50.0	80.0
Not positively discouraged	0.0	50.0	13.3
No response	9.1	0.0	6.7
TOTAL	100.0	100.0	100.0
No. of respondents	(11)	(4)	(11)

TABLE 14
Percentage Distribution of Respondents by Reasons Given for Discouragement to Migrate to Cebu City, and by Type of Migrant, 1972

Reason for Discouragement	Type of Migrant		
	Individual	Household Head	All Migrants
Familial	36.4	0.0	26.7
Economic	18.2	50.0	26.7
Moral	36.4	25.0	33.3
No response	9.0	25.0	13.3
TOTAL	100.0	100.0	100.0
No. of respondents	(11)	(4)	(11)

informational and aid links between potential and actual migrants. The informational links between the migrants' areas of origin and destination are reinforced by ties of assistance through which new migrants are aided in their assimilation in the new area (Simkins and Wernstedt 1971: 63). To test this theory, it was hypothesized by the present study that the presence of, and the expected aid from, the potential migrants' relatives or friends in Cebu City, reinforced their motivation to migrate.

The direct influence of relatives in Cebu City on the migrants' decision to migrate was measured by examining the proportions of the following: (1) migrants who would not have migrated if they had no relatives in the city, and those who would have migrated regardless of the presence of relatives, and (2) migrants who expected help from their relatives in Cebu City, and those who did not. The aid expected from, and the actual help extended by, the migrants' relatives were indicated by the latter's mode of living in Cebu City, i.e., whether they were living independently or living with their relatives. When migrants were staying with their relatives in Cebu City, it was assumed that they expected this kind of assistance before they moved.

A majority (79 percent) reported that they had known of relatives in Cebu City before they migrated. Among these migrants, a little more than one half contended that they would also have come if these relatives had not been here, while 49.5 percent admitted that their coming was contingent upon the presence of relatives in Cebu City. The presence of relatives was less important for family migrants than for individual migrants.

Of the former, two thirds said that the presence of relatives in Cebu City was of no importance.

The data in Table 15 point toward a certain amount of influence which the migrant's relatives had on the decision to move, even though the relationship, as far as the Cebu City migrants are concerned, is not as strong as the hypothesis indicates. However, the question of whether one would have come with or without being able to fall back on relatives may obscure the real situation, since it is partly an attitudinal question the answer to which is easy to manipulate. A more concrete question is whether those who had relatives living in the city expected help from them or not. If the majority of migrants had done so, it could be concluded that relatives are an important reinforcing factor in a person's decision to migrate. Table 16 shows that the overwhelming majority of migrants with relatives in the city expected help from them. The difference between individual and household migrants was a minor one (84 versus 74 percent). In fact, no significant correlation was found between expecting help from relatives in Cebu City and type of migrant.[6]

TABLE 15
Percentage Distribution of Respondents by Influence of Relatives in Place of Destination on Decision to Move, and by Type of Migrant, 1972

Influence of Relatives	Type of Migrant		
	Individual	Household Head	All Migrants
Those who would have moved regardless of relatives' presence in city	49.5	62.5	50.4
Those who would not have moved had they not had relatives in city	50.5	37.5	49.6
TOTAL	100.0	100.0	100.0
No. of respondents	(103)	(9)	(112)

TABLE 16
Percentage Distribution of Respondents by Expectation of Help from Relatives in Cebu City, and by Type of Migrant, 1972

Expectation of Help	Type of Migrant		
	Individual	Household Head	All Migrants
Yes	84.0	73.5	81.9
No	16.0	26.5	18.1
TOTAL	100.0	100.0	100.0
No. of respondents	(188)	(49)	(237)

[6]Insignificant x^2 of 3.05 at .05 level of significance.

One of the most important kinds of help which relatives at the place of destination can offer to migrants is shelter. Of those migrants who reported to have relatives in the city, 90 percent were staying with them. When classified into individuals and households, a clear difference becomes evident: 91.3 percent of all individual migrants were staying with relatives, compared to only 67.5 percent of all household migrants (see Table 17).

Correlating prior knowledge of the presence of relatives with whether or not migrants were staying with relatives, a Q coefficient of .57 emerged for individual migrants, and − .1 for household migrants. Since the Q for individual migrants is significant[7] while that for household migrants is not, it can be concluded that for individual migrants, relatives in place of destination tended to be of importance, while for household migrants they were not. Furthermore, the fact that the migrants' knowledge of their relatives' presence in Cebu City before they migrated had minimal influence on the heads of migratory households' decision to migrate suggests that the latter were most affected by, and the most likely to respond to, economic pressures in their areas of origin. By contrast, for individual migrants the situation in the place of destination had to be "right" before they moved or were allowed to move.

Information about Better Livelihood Opportunities Available in the Area of Destination

Direct and indirect measures were used to test the hypothesis that information about better livelihood opportunities available in Cebu City, transmitted to the potential migrant by his relatives or friends, facilitates the migrant's decision to migrate. The direct measures were the proportion of those who had and those who had not received information and the proportion of those who would have migrated even without receiving information. Indirectly, the hypothesis was tested by comparing the type of information received and the reasons for migration, and by investigating the association, if any, between these variables.

Among the 300 migrants, two thirds had received information about better livelihood opportunities available in Cebu City. Among this group of migrants, 72.2 percent claimed that they would have migrated to Cebu City regardless of such information while 27.8 percent would not have done so. The facilitating influence which reception of information about better livelihood opportunities available in Cebu City has on the migrants' decision to move is evident in the latter group. Among those who had taken into account prior information, there were more individual migrants (29 percent) than heads of migratory households (20 percent). This difference implies that reception of information on better livelihood opportunities in the area of destination tends to have a stronger positive influence on the decision to migrate of the individual rather than of the heads of migrant families, and confirms the earlier statement that for individuals the livelihood opportunities at the chosen destination have to be "right" before the move is made.

Type of information received and reasons for migration

Table 18, which gives a breakdown of the types of information received by migrants, shows that the majority of the migrants (73.2 percent) had prior information about job opportunities. One fifth received information about educational opportunities and less than five percent about good business prospects in Cebu City.

Cross-tabulating the type of information migrants had received with their reasons for migration revealed a high correlation between receiving information on educational opportunities and moving in for education-related reasons for individual migrants. About 95 percent of the individuals who had received information on educational

[7]Significant x^2 of 4.62 at .05 level of significance.

TABLE 17
Percentage Distribution of Respondents by Living Arrangements, by Prior Knowledge of Presence of Relatives in Place of Destination, and by Type of Migrant, 1972

Prior Knowledge of Presence of Relatives in Cebu City	Mode of Living in Present Residence					
	Living with Relatives			Living Independently		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Had prior knowledge	91.3	75.0	90.0	74.2	78.6	76.2
Had no prior knowledge	8.7	25.0	10.0	25.8	21.4	23.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(103)	(8)	(111)	(62)	(56)	(118)

TABLE 18
Percentage Distribution of Respondents by Type of Information about Cebu City Received Prior to Migration and by Type of Migrant, 1972

Type of Information	Type of Migrant		
	Individual	Household Head	All Migrants
Job openings	71.6	82.8	73.2
Business prospects	3.6	10.3	4.5
Educational opportunities	22.5	6.9	20.2
Others	2.3	0.0	2.0
TOTAL	100.0	100.0	100.0
No. of respondents	(169)	(29)	(198)

opportunities migrated to Cebu City for education-related reasons. A similar association is evident between information about job opportunities and job-related reasons for household heads. Among those who had received information on job opportunities, 79.2 percent of the individual migrants and 84 percent of heads of migratory households moved for job-related reasons (see Table 19).

The data in Table 19 suggest that migrants tended to move to Cebu City only after they had been assured, to some degree, that they would find what they were looking for. This seems to be reasonable for migrants who had come for educational reasons. It is also reasonable for individual migrants who were job-seekers. As shown in Table 20, more than than two thirds (68.5 percent) of individual migrants who were presently holding jobs had received information about job opportunities. By contrast, three fourths of those who were not presently holding jobs had not received prior information. Reception of information on job opportunities was found to be related to the present job situation among individual migrants.[8] Such correlation was found to be non-existent among heads of migrating families.[9]

However, a considerable proportion of migrants (66.7 percent) who had received information on business prospects gave education as their reason for migration. Among these, 71.4 percent were individual migrants and 33.3 percent were migrant families. The large difference between individuals and household heads may partly explain the disparity between motive for migration and information received. It is possible that individual migrants, many of whom came as students, may have heard of good business prospects in Cebu City, without this information necessarily affecting their motive to migrate, i.e., to study.

Differences in reasons for migration between migrants who had received prior information about place of destination and those who had not

There was a discernible difference between migrants who had received information and those who had not, as far as job opportunities and education were concerned. The figures in Table 21 show that the proportion of migrants who migrated for job-related reasons was higher for those who had received information than for those who had not. Similarly, the proportion of those who came to the city for education-related reasons was higher among those who had received information than among those who had not.

[8]Significant x^2 of 33.7.

[9]x^2 of 1.2 (not significant at .05 level of significance).

TABLE 19
Percentage Distribution of Respondents by Primary Reasons for Migration to Cebu City, by Type of Information Received and by Type of Migrant, 1972

Type of Information Received	Primary Reasons for Migration			Total	
	Job-related	Education-related	Others		
Job Opening					
Individual	79.2	15.8	5.0	100.0	(120)
Household head	84.0	4.0	12.0	100.0	(25)
All migrants	78.8	14.4	6.8	100.0	(146)
Business Prospects					
Individual	78.6	21.4	0.0	100.0	(7)
Household head	33.3	33.3	33.3	100.0	(3)
All migrants	22.2	66.7	11.1	100.0	(10)
Educational Opportunities					
Individual	5.3	94.7	0.0	100.0	(38)
Household head	100.0	0.0	0.0	100.0	(1)
All migrants	7.7	92.3	0.0	100.0	(39)
Others					
Individual	75.0	25.0	0.0	100.0	(4)
Household head	0.0	0.0	0.0	0.0	(0)
All migrants	75.0	25.0	0.0	100.0	(4)
ALL TYPES					
Individual	60.4	36.1	3.5	100.0	(169)
Household head	79.3	6.9	13.8	100.0	(29)
All migrants	63.1	31.8	5.1	100.0	(198)

The proportion of those who had received information was larger for migrants who had come for education-related reasons than for those who came for job-related reasons. Likewise, it was larger for individual migrants than for heads of migratory households. The latter finding seems to bear out once again the statement that reception of information has a stronger influence on the individual's rather than on the household head's decision to migrate. This, in turn, confirms the earlier observation that household heads, together with their families, respond mostly to economic pressures in their places of origin.

Help Received from Relatives after Migration

In the previous section it was shown that the presence of, and the expected aid from, the potential migrants' relatives in Cebu City does reinforce the motivation to migrate, at least for individual migrants. In this study the assistance migrants received from their relatives in the city were grouped in two, namely, housing and other forms.

Living with relatives

One form of actual assistance which relatives extended to migrants was allowing the

TABLE 20
Percentage Distribution of Respondents by Reception of Prior Information about Job Opportunities Available in Cebu City, by Present Job Situation, and by Type of Migrant, 1972

Reception of Prior Information about Job Opportunities	Present Job Situation					
	Presently Holding a Job			Presently Not Holding a Job		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Received prior information	68.5	42.6	61.6	25.3	20.0	24.7
Did not receive prior information	31.5	57.4	38.4	74.7	80.0	75.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(149)	(54)	(203)	(87)	(10)	(97)

TABLE 21
Percentage Distribution of Respondents by Primary Reasons for Migration to Cebu City, by Reception of Information, and by Type of Migrant, 1972

Primary Reason for Migration	Reception of Information: Yes — Individual	Yes — Household Head	Yes — All Migrants	No — Individual	No — Household Head	No — All Migrants
Job-related	60.4	79.3	63.1	46.2	68.6	53.9
Marriage-related	0.6	0.0	0.5	10.5	11.4	10.8
Family welfare	0.6	10.3	2.0	3.0	2.9	2.9
Education-related	36.1	6.9	31.8	31.3	2.9	21.6
Others	2.3	3.5	2.5	9.0	14.2	10.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(169)	(29)	(198)	(67)	(35)	(102)

migrants to stay with them for a while or even permanently. Table 22, which gives a breakdown of each type of migrant's mode of living, shows that a majority of migratory households were living independently (87.5 percent), while among the individual migrants, 43.8 percent were living with their relatives, 26.3 percent were living independently, and 30.1 percent were staying with their employers.

Discounting the migrants who were staying with their employers (those who work as maids generally live with their employers), the proportion of individual migrants who were living with their relatives increases to 62.4 percent. As to the intended duration of their stay with their relatives, only approximately six percent of these migrants manifested an intention of staying permanently, 17.2 percent wanted to stay until their studies were finished, and another 27.2 percent declared that they would continue living with their relatives for as long as they could.

TABLE 22
Percentage Distribution of Respondents by Mode of Living in Present Residence, and by Type of Migrant, 1972

Mode of Living in Present Residence	Type of Migrant		
	Individual	Household Head	All Migrants
Living with relatives	43.6	14.1	37.0
Living independently	26.3	85.9	39.3
Living with employer	30.1	0.0	23.7
TOTAL	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)

Other forms of assistance extended to the migrants by their relatives

Although a relatively large proportion (62 percent) of the migrants were not able to enjoy the benefits of residing with their relatives, four fifths of them were recipients of other forms of assistance from relatives in the city. The migrants who had experienced family, financial, and health problems in Cebu City, generally went to their relatives for help rather than to friends or neighbors. As Table 23 indicates, seven out of ten migrants sought the help of their relatives while less than ten percent approached either a friend or a neighbor when they had these problems.

The relatives acted as a source of aid to the migrants particularly when the latter had family trouble. This is not surprising since family problems are private affairs which are supposed to be discussed among kinfolks only.

Although a majority of migrants approached their relatives for help when they had family, financial, and health problems, heads of migratory households exhibited a tendency to approach their friends or neighbors more often than individual migrants did. One factor which could account for this disparity is the probable difference in intended length of stay in Cebu City between individual migrants and heads of migratory households. Household heads, having practically brought all the members of their families to the city, were more likely to stay there longer than individuals. Moreover, migrant households living apart from relatives in the city and with only distant relatives in their places of origin, tended to gradually lose their attachment to their places of origin and their kinship-oriented upbringing because of diminishing contacts. Heads of migratory households, in order to find alternatives to the diminishing function of their relatives, tended to adapt to the ways of their new neighborhood, hence, the

TABLE 23
Percentage Distribution of Respondents by Persons Approached When in Trouble in Cebu City, by Type of Trouble, and by Type of Migrant, 1972

Kind of Trouble	Persons Approached: Relatives	Friends/ Neighbors	Others	Total	
Family					
Individual	86.8	5.3	7.9	100.0	(38)
Household head	72.9	20.8	6.3	100.0	(48)
All migrants	79.1	13.9	7.0	100.0	(86)
Financial					
Individual	74.5	6.5	19.0	100.0	(216)
Household head	66.7	18.7	14.6	100.0	(48)
All migrants	73.1	8.7	18.2	100.0	(264)
Health					
Individual	83.3	6.1	11.6	100.0	(198)
Household head	46.4	21.4	32.2	100.0	(56)
All migrants	74.4	9.5	16.1	100.0	(254)
ALL KINDS					
Individual	79.0	6.2	14.8	100.0	(452)
Household head	61.2	20.4	18.4	100.0	(152)
All migrants	74.5	9.8	17.7	100.0	(604)

comparatively frequent interaction between heads of migratory households and their neighbors.

DIFFICULTIES ENCOUNTERED BY RURAL MIGRANTS IN CEBU CITY

In their 1969 study of a Manila suburban squatter community, Stone and Marcella point out that, like urban squatters, migrants are beset with many problems. Foremost among these problems are unemployment and underemployment (Stone and Marcella 1969: 65) There are either not enough jobs in the city that can absorb the migrants or migrants do not possess the skills and the training which jobs in the city need. In the latter case, migrants are forced to accept jobs in the service sector even if these yield only a minimum pay.

Another set of problems migrants frequently encounter concerns living quarters. The ruralite who is used to plenty of space and water often finds little or nothing of these commodities in the city. Stone and Marcella mention other problems as flooding of the neighborhood during rainy season, the existence of stagnant mosquito-breeding pools, and poor sanitation (Stone and Marcella 1968: 65).

One difficulty which a migrant may experience during his early stay in the city is the absence of neighborliness. This was hypothesized by the present study because the recent migrant knows only a few people in the city or none at all. Consequently, there is little social interaction, and help in times of need can hardly be expected. This problem has been examined in detail by Jacobson. Her study revealed that the absence of neighborliness was strongly felt by Cebu City residents. (Jacobson n.d.: 56).

Based on these studies and observations, it was hypothesized that most migrants, upon arrival in Cebu City, are faced with economic, environmental, and socio-cultural problems. Economic problems are related to finding or looking for a job and obtaining sufficient income. Environmental problems include housing and sanitation, and socio-cultural problems arise out of the absence of neighborliness in the city which the migrants feel almost immediately upon their arrival and during their early stay in their new neighborhoods.

In the following section, each type of problem hypothesized for migrants is measured separately. For environmental problems, the type of house and household facilities the migrants had, examined relative to their mode of occupancy, was used as a measure. Other measures utilized were the migrants' comparisons between their living quarters in Cebu City and those in their places of origin, and their desire to transfer to another neighborhood within Cebu City. As indicators of economic problems, the following were used: (1) length of time entailed in finding the first job in Cebu City, (2) number of working hours and remuneration, (3) purchasing power measured in terms of tendency to buy on credit, and (4) the proportion of migrants in Cebu City who were occupationally dislocated.

In order to objectively evaluate neighborliness and to note its presence or absence in Cebu City for the rural migrants, the concept was defined in two ways: (1) "superficial" neighborliness, which is characterized by mere friendliness and pleasantness of neighbors, and (2) "real" neighborliness, which is indicated by willingness to extend help to a migrant neighbor, which, in turn, makes the latter less inhibited to ask for help. Jacobson define the absence of neighborliness as "the people's feeling that support and aid in crises are not characteristics of neighborhood relationships in urban areas (Jacobson n.d.: 56). The opposite of Jacobson's definition approximately characterizes real neighborliness as treated in this study. Both types of neighborliness defined above are similar to Jocano's two levels of neighborhood relationships in a slum area based on duration of residence, which are (1) relationship on the acquaintance level, i.e., characterized by mere familiarity of neighbors, and (2) the intimate level of relationship which he described as "the inner world of relationship which equips the individual with the capacity to adjust to the slum environment; it has its own realities, its dynamism, its own ecology which orient any dweller to accept what slum life has to offer. This kind of relationship is achieved after living in the slum neighborhood for a long time (Jocano 1975: 171). However, no operational definition of "a long time" has been provided by the author.

In this study, two methods were used to measure the different types of neighborliness. For superficial neighborliness, percentage point differences of attitude between neighbors in present residence and neighbors in place of origin at certain time periods were used as a measure. For real neighborliness, the number of times migrants approached neighbors for help was used as the index.

Environmental Problems

An inspection of Table 24 reveals that nearly three fourths (71.2 percent) of all migrants were residing in houses of mixed building materials, about 20 percent in houses constructed of light building materials, and less than ten percent in strong constructed ones.[10] An earlier examination of the modes of living showed that relatively few individual migrants (26.3 percent) were living independently. Most of them were either staying with their employers (30 percent) or with relatives (44 percent). By contrast, 85.9 percent of migratory households were living on their own.

[10]Strongly-built houses are constructed of galvanized iron or tile and concrete. Light building materials are *nipa, anahaw, buri, cogon,* wood and salvaged materials. Mixed buildings are constructed of "strong" and "light" materials.

TABLE 24
Percentage Distribution of Migrants by Type of Housing Construction Materials and by Mode of Living, 1972

Type of Housing Construction Material	Mode of Living											
	Independently			With Relatives			With Employers			All Modes		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Strong	8.1	7.1	7.6	9.7	0.0	9.0	9.9	0.0	9.9	9.3	6.2	8.7
Mixed	75.8	59.9	67.8	74.8	62.5	73.9	74.6	0.0	74.6	75.0	59.4	71.6
Light	16.1	33.9	24.6	15.5	37.5	17.1	15.5	0.0	15.5	15.7	34.4	19.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(62)	(56)	(118)	(103)	(8)	(111)	(71)	(0)	(71)	(236)	(64)	(300)

Since migrants who were living with either employers or relatives most probably did not maintain a level of living corresponding to that of their employers or relatives, their housing accommodations do not mirror their economic status. Studying only those who were dwelling independently, one finds that almost one fourth (24.6 percent) were residing in lightly constructed houses, 67.8 percent in houses of mixed construction materials, and a little less than eight percent in strongly built ones. The bulk of this group of migrants apparently accommodated themselves in houses of lighter construction materials. This is especially true for migratory households.

The type of housing construction materials did not always reveal the type of facilities with which the migrants' houses were equipped. An overwhelmingly large proportion of individual migrants had relatively good facilities in their homes, i.e., piped water (84.7 percent), electricity (91.5 percent), and flush toilets (81.8 percent).

This is not entirely surprising as almost all of Cebu City has electricity. Its residents are provided with piped water by the city, and the costs of consumption are within reach of the majority. The proportion of those migrants with flush or water-sealed toilets in their homes was slightly smaller (compared to the other facilities) because this type of toilet is expensive to construct, and houses equipped with it demand higher rentals. The observation that 66.6 percent among those migrants living independently had this type of toilet facilities affirms this assumption (see Table 25).

As illustrated in Table 26, the proportion of migratory households which had relatively good household facilities is strikingly smaller than that of their individual counterparts.

That few household migrants have relatively good houses (in terms of construction materials) can be expected because more often than not migratory households have no relatives to lean on. Naturally, they are more likely to adopt saving techniques, and

TABLE 25
Percentage Distribution of Individual Migrants to Cebu City by Mode of Living, and by Household Facilities, 1972

Household Facility	Mode of Living			
	Independently (n = 62)	With Relatives (n = 103)	With Employer (n = 71)	All Modes (n = 236)
Water Supply				
Piped	83.9	83.5	87.3	84.7
Artesian well	16.1	14.6	12.7	14.4
Open well	0.0	1.9	0.0	0.9
TOTAL	100.0	100.0	100.0	100.0
Electricity				
With electricity	85.5	90.3	98.6	91.5
Without electricity	14.5	9.7	1.4	8.5
TOTAL	100.0	100.0	100.0	100.0
Toilet Facilities				
Flush	66.1	80.6	97.2	81.8
Antipolo	27.4	13.6	2.8	14.0
None	6.5	5.8	0.0	4.2
TOTAL	100.0	100.0	100.0	100.0

TABLE 26
Percentage of Migratory Households in Cebu City, by Mode of Living, and by Household Facilities, 1972

Household Facility	Mode of Living		
	Independently (n = 56)	With Relatives (n = 8)	Both Modes (n = 64)
Water Supply			
Piped	50.0	62.5	51.6
Artesian well	44.6	25.0	42.2
Open well	5.4	12.5	6.2
TOTAL	100.0	100.0	100.0
Electricity			
With electricity	64.3	62.5	64.1
Without electricity	35.7	37.5	35.9
TOTAL	100.0	100.0	100.0
Toilet Facilities			
Flush	41.1	50.0	42.2
Antipolo	46.4	50.0	46.9
None	12.5	0.0	10.9
TOTAL	100.0	100.0	100.0

dwelling in houses of lighter construction materials with poor facilities and cheaper rents is one way of doing this.

Migrants were asked to roughly evaluate their living quarters in Cebu City in terms of the residences which they had occupied in their areas of origin. To the question of which living quarters were better, 45.3 percent of all migrants claimed that their houses in Cebu City were better, while 44.7 percent thought otherwise. The rest believed that both were similar.

Table 27, which gives a breakdown of migrants by type of present residence, shows that more than one half (58.7 percent) of those who occupied houses built of strong materials thought that their living quarters in Cebu City were better than those in their places of origin. By contrast, only one third (31 percent) of those living in houses made of light materials thought so. This fact confirms the earlier finding that many migrants were living in substandard houses in Cebu City. It also suggests that a remarkable number of migrants (44.7 percent) were aware of their poor living conditions in Cebu City, and that a considerable number of migrants had already achieved a certain amount of upward economic mobility since they migrated to Cebu City.

Although a large proportion (44.7 percent) of migrants expressed some degree of discontent with their present living conditions, a much higher proportion (62.3 percent) did not consider the idea of moving to another neighborhood; only 37.3 percent expressed such a wish. Among the 27 individual migrants and 45 migratory households who were living independently in Cebu City, more than one half (51.8 percent and 57.1 percent, respectively) did not manifest a desire to change residences within Cebu City. However, the lack of desire to change residence does not mean satisfaction with existing conditions. In many cases, it may simply be the inability to move, which makes any desire to do so academic.

TABLE 27
Percentage Distribution of Respondents by Their Comparison of Living Quarters in Place of Origin and Place of Destination, by Type of Building Material of Present Residence, and by Type of Migrant, 1972

Comparison of Living Quarters	Type of Building Material of Present Residence											
	Strong			Medium			Light			All Types		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Living quarters in Cebu City better	57.1	75.0	58.7	46.8	45.0	46.4	21.0	50.0	31.0	44.5	48.4	45.3
Living quarters in place of origin better	35.7	25.0	34.8	42.9	42.5	42.9	73.7	30.0	58.6	46.6	37.5	44.7
Living quarters in both places the same	7.1	0.0	6.5	10.3	12.5	10.7	5.3	20.0	10.4	8.9	14.1	10.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(22)	(4)	(26)	(177)	(38)	(215)	(37)	(22)	(59)	(236)	(64)	(300)

When those who wanted to change residences were separated according to present type of living arrangement (Table 28), the majority consisted of those living independently. Migrants housed with relatives expressed the least desire to change, a fact which again points to the importance of relatives in the city. Among individual migrants, those living with their employers, despite the relatively good housing conditions which their residences offered, would have liked to change residences. This latter finding suggests that employees residing with their employers may not have been allowed to enjoy all the facilities which their employers' houses offered. This seemed to be the case especially for domestic helpers who often were confined to tiny and uncomfortable quarters in the otherwise well appointed houses of their employers.

Table 29 shows that a majority of both individuals (41.7 percent) and household heads (45.2 percent) who wanted to transfer to another neighborhood were motivated to do so for environmental reasons like a filthy neighborhood, noise, or poor household facilities. Thirty-six percent of both types of migrants would have liked to move to another neighborhood for economic reasons, i.e., they wanted to transfer to a place where the cost of living was cheaper. Only 20 percent desired to move because of their unpleasant

TABLE 28
Percentage Distribution of Respondents by Desire to Change Residence in City, by Mode of Living, and by Type of Migrant, 1972

	Type of Migrant Wanting to Change Residence		
Mode of Living	Individual	Household Head	All Migrants
Living with relatives	26.5	17.4	23.6
Living independently	26.5	82.6	44.4
Living with employer	47.0	0.0	32.0
TOTAL	100.0	100.0	100.0
No. of respondents	(49)	(23)	(72)

TABLE 29
Percentage Distribution of Respondents by Reasons for Desire to Transfer to Another Neighborhood, and by Type of Migrant, 1972

Reason for Desire to Transfer to Another Neighborhood	Type of Migrant		
	Individual	Household Head	All Migrants
Environmental	41.7	45.2	42.6
Social	20.2	19.3	20.0
Economic	39.1	32.3	36.5
Others	0.0	3.2	0.9
TOTAL	100.0	100.0	100.0
No. of respondents	(84)	(31)	(115)

neighbors. Those who preferred to stay in their present neighborhoods wanted to do so mainly for social reasons, secondly for economic reasons, and only rarely for environmental reasons (see Table 30). Fifty-three percent of all the migrants decided to remain in their present neighborhoods because of the pleasant neighbors around. Thirty-one percent of the individual migrants and 56.2 percent of heads of migratory households wanted to stay for economic reasons. This suggests that, unlike the majority of individual migrants, migratory households are guided mostly by economic rather than social considerations in their deliberations to stay or transfer.

TABLE 30
Percentage Distribution of Respondents by Reasons for Preference to Stay in Present Residence, and by Type of Migrant, 1972

Reason for Preference to Stay in Present Neighborhood	Type of Migrant		
	Individual	Household Head	All Migrants
Environmental	8.7	18.7	10.5
Social	60.4	18.7	53.0
Economic	30.9	56.3	35.4
Others	0.0	6.3	1.1
TOTAL	100.0	100.0	100.0
No. of respondents	(149)	(32)	(181)

Economic Problems

Table 31, which gives a breakdown of the length of time needed by rural migrants to find their first job in Cebu City, indicates that about two thirds (61 percent) of all migrants had to spend an entire month seeking employment; 20 percent had to search for six months, and about seven percent were unsuccessful for a year or more.

Of those who had come to Cebu City in search of jobs in 1972, 17 (eight percent) were still jobless. Migrants who did not find a job within a span of one month were no doubt an economic burden to the friends or relatives on whom they were leaning, or to their families in their places of origin if they had no one in the city to support them.

Of the migrants (202) who came to Cebu City in 1972 and who had gainful occupation by 1975, 54.4 percent were in service occupations (low-prestige jobs). Only 1.5 percent were in professional occupations (high-prestige jobs), 33.3 percent had skilled jobs (medium-prestige jobs), and 10.9 percent were in other forms of low-prestige occupations.

The very large proportion of migrants in the service sector is an indication of an unhealthy economic situation. It becomes worse if we take into account the number of working hours migrants put into their jobs, and the remuneration they received. The Bureau of the Census and Statistics defines a person working 40 hours and above a week as fully employed, and a person with working hours below this level as underemployed (Bureau of Census and Statistics 1971: XVIII). Since 40 hours is relatively little, the measure used in this study to determine full employment was 45 hours. If we consider persons working less than 45 hours per week as underemployed, and those working 60

TABLE 31
Percentage Distribution of Employed Respondents by Length of Time Needed to Find a Job in Cebu City, and by Type of Migrant, 1972

Length of Time Needed to Find First Job	Type of Migrant		
	Individual	Household Head	All Migrants
Less than 1 month	67.1	43.4	60.9
1-6 months	21.5	15.1	19.8
7 months and over	6.0	9.4	6.9
No information	5.4	32.1	12.4
TOTAL	100.0	100.0	100.0
No. of respondents	(149)	(53)	(202)

hours and above as overworked, then 53.5 percent of the rural migrants were overworked and 17.8 percent were underemployed (see Table 32).

Table 32 illustrates that the proportion of overworked persons (64.5 percent) was especially large among individual migrants, and the proportion of underemployed among heads of migratory households was 28.3 percent. It is interesting to note that among the latter, relatively few were overworked.

Although a remarkable proportion of migrants were overworked (53 percent), only ten percent of all migrants had a relatively high income (P450 and above a month), while almost two thirds (65 percent) earned less than P250 monthly (see Table 33).

Table 34 shows that among the overworked migrants (working 60 hours or more per week), 86 percent received a monthly income of less than P250. Examining the two types of migrants separately, one finds that 92.8 percent of individual migrants received less than P250 a month. By contrast, only 36.4 percent of heads of migratory households had such a low income.

TABLE 32
Percentage Distribution of Employed Respondents by Number of Weekly Working Hours, and by Type of Migrant, 1975

No. of Weekly Working Hours (Employment Status)	Type of Migrant		
	Individual	Household Head	All Migrants
44 and below (underemployed)	14.1	28.3	17.8
45-59	21.4	49.1	18.7
60 and above (overworked)	64.5	22.6	53.5
TOTAL	100.0	100.0	100.0
No. of respondents	(149)	(53)	(202)

TABLE 33
Percentage Distribution of Employed Respondents by Monthly Income, and by Type of Migrant, 1975

Monthy Income	Type of Migrant		
	Individual	Household Head	All Migrants
Below P250	71.5	47.2	65.0
P250-P449	11.1	24.5	14.8
P450 and above	6.3	20.7	10.1
No fixed income	11.1	7.5	10.1
TOTAL	100.0	100.0	100.0
No. of respondents	(144)*	(53)	(197)

* Five individual migrants gave no information.

The proportion of migratory households receiving less than P250 a month decreased with the increase in the number of working hours. The proportion of those receiving P450 or more a month increased with the increase in working hours. No clear pattern of a similar form is evident for individual migrants. These observations seem to point out two things. First, in terms of working hours and corresponding remuneration, heads of migratory households were somewhat better-off than their individual counterparts, and that most of the former possessed jobs for which they were reasonably well paid. Second, the remarkable proportion of overworked individual migrants receiving low incomes seems to consist largely of domestic helpers who had long working hours and monthly salaries often below P100. Overall, it can be stated that a majority of migrants tended to work for relatively low salaries.

The generally low income of the migrants is reflected in their low purchasing power which, in turn, is manifested in their tendency to buy on credit. More than one third (34.5 percent) of all migrants reported that they bought things needed for daily life on credit. This was the practice of 62 percent of the migratory households. Nine out of ten migrants did so for lack of money at the time the item was needed. Foremost among the items bought on credit was food. Eighty-seven percent of migratory households and 56.3 percent of individual migrants who bought on credit used it for food (Table 35). The frequency of buying on credit varied from "very often" (22 percent of all respondents) to "seldom" (17.3 percent) (Table 36). Sources of credit were usually the neighborhood *sari-sari* stores,[11] friends, or co-employees who loaned money. Relatives, surprisingly, did not figure very much in such transactions (Table 37). Debts incurred through borrowing were usually repaid on a monthly, bi-monthly, or weekly basis, depending on the manner in which salaries were received.

The fact that there were more migratory households than individual migrants who bought foodstuffs on credit reveals the precarious economic situation in which most migratory households found themselves, despite the observation made earlier that heads of migratory households had higher incomes than individual migrants. But, heads of migratory households only appeared to be receiving higher incomes (see Table 34). A household head earning P450 or more per month had to support an average of 4.5 household members besides himself/herself. Likewise a household head earning between P250 and P449 had to pay for the cost of living of an average of four persons, including

[11] A *sari-sari* store is a small neighborhood retail store.

TABLE 34
Percentage Distribution of Employed Respondents by Monthly Income, by Weekly Working Hours, and by Type of Migrant, 1975

Monthly Income	Weekly Working Hours											
	44 and Below			45–49			60 and Above			All Hours		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Below P250	68.4	71.4	69.7	50.0	45.8	48.0	92.8	36.4	86.2	80.5	51.0	72.3
P250–P449	21.1	28.6	24.2	34.6	25.0	30.0	3.6	27.2	6.4	12.5	26.5	16.4
P450 and above	10.5	0.0	6.1	15.4	29.2	22.0	3.6	36.4	7.4	7.0	22.4	11.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(19)	(14)	(33)	(26)	(24)	(50)	(83)	(11)	(94)	(128)*	(49)**	(177)

* Six individuals had no fixed incomes and five gave no information.

** Four household heads had no fixed incomes.

TABLE 35
Percentage Distribution of Respondents by Items Usually Bought on Credit, and by Type of Migrant, 1975

Item Bought on Credit	Type of Migrant		
	Individual	Household Head	All Migrants
Foodstuffs	56.3	87.5	68.3
Household appliances	4.7	2.5	3.8
Personal belongings	35.9	7.5	25.0
Others	3.1	2.5	2.9
TOTAL	100.0	100.0	100.0
No. of respondents	(64)	(40)	(104)

TABLE 36
Percentage Distribution of Respondents by Frequency of Buying on Credit, and by Type of Migrant, 1975

Frequency of Buying on Credit	Type of Migrant		
	Individual	Household Head	All Migrants
Very often	17.2	30.0	22.1
Often	20.3	25.0	22.1
Not often	46.9	22.5	37.5
Seldom	15.6	20.0	17.3
No response	0.0	2.5	1.0
TOTAL	100.0	100.0	100.0
No. of respondents	(64)	(40)	(104)

TABLE 37
Percentage Distribution of Respondents by Persons and Institutions Who Extend Credit, and by Type of Migrant, 1975

Persons/Institutions Extending Credit	Type of Migrant		
	Individual	Household Head	All Migrants
Neighborhood store	51.7	67.5	57.7
Relative	6.2	2.5	4.8
Friend, co-employee	26.6	17.5	23.1
Others	15.6	12.5	14.4
TOTAL	100.0	100.0	100.0
No. of respondents	(64)	(40)	(104)

himself/herself. Those earning below P250 had an average of 3.6 other household members to support. Obviously the per capita income of members of migratory households was far below P250 per month (see Table 38).

TABLE 38
Percentage Distribution of Respondents by Income of Members of Migratory Households,* and by Monthly Income of Household Head, 1975

Monthly Income Range of Household Head	No. of Households	Average Size of Household	Total Monthly Income of All Household Heads	Per Capita Income of Household Members
Below P250	25	4.6	P4,563	P 39.70
P250-P449	13	4.0	P4,403	P 84.70
P450 and above	11	5.5	P8,000	P132.20

* Figures are based on 49 migratory households.

Objective observations presented have indicated the economic situation with which many migrants, especially migratory households, have to cope. Subjectively, however, the migrants themselves did not always think in similar terms. Asked to compare their economic situation in Cebu City with that in their places of origin, migrants still considered their conditions in Cebu City as an improvement over conditions in their home regions; at least 67.3 percent of them stated this (see Table 39).

The proportion of heads of migratory households who claimed to have a better economic situation in Cebu City was greater than the proportion of individual migrants (71 versus 66 percent). The reasons for their saying so were the presence of jobs and larger incomes (see Table 40). Obviously, there must be some truth in the migrants' perception of their present economic situation. Otherwise, they would not have continued to live in Cebu City. One thing that can be deduced from this is how much harder the migrants' lives must have been in their areas of origin.

TABLE 39
Percentage Distribution of Respondents by Comparison of Economic Situation in Cebu City with That in Place of Origin, and by Type of Migrant, 1975

Comparison of Economic Situation	Type of Migrant		
	Individual	Household Head	All Migrants
Cebu City is better	66.1	71.9	67.3
Place of origin is better	22.9	21.9	22.7
Cebu City and place of origin are the same	11.0	6.2	10.0
TOTAL	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)

TABLE 40
Percentage Distribution of Respondents by Reasons Given for Believing Their Economic Situation in Cebu City to Be Better than in Their Places of Origin, and by Type of Migrant, 1975

Reason for Believing Their Economic Condition Is Better in Cebu City	Type of Migrant		
	Individual	Household Head	All Migrants
Presence of job	59.6	34.8	53.9
Bigger income	27.6	50.0	32.7
Lower cost of living	0.6	0.0	0.5
Others	12.2	15.2	12.9
TOTAL	100.0	100.0	100.0
No. of respondents	(156)	(46)	(202)

Occupational Dislocation

Occupational dislocation results when a job a migrant holds in the place of destination does not correspond to the job he had held in his place of origin, or when the job does not match the training he has received. It was hypothesized that rural migrants to Cebu City do not possess the skills or the training which jobs available in the city may require, and, therefore, they will be unable to find the right job. Another possibility is that migrants, because of the scarcity of jobs in the city, will take whatever job is available, regardless of whether they are unqualified, qualified, or overqualified for it.

What kind of work could the migrants in this study perform? Table 41 points out very clearly the inverse relationship between education and coming to Cebu City for reasons of finding a job. More than one half of all migrants with a "high" education had come to the city to further their education, but 85 percent of all those with a "low" education background migrated to seek a job. This means that migrants were capable of helping develop the city economy only to a limited extent. Most of them tended to become a

TABLE 41
Percentage Distribution of Respondents by Reasons for Migration, and by Level of Education, 1972

Reason for Migration	Level of Education		
	High*	Medium**	Low†
Job-related reasons	44.3	74.7	84.4
Education-related reasons	55.7	25.3	15.6
TOTAL	100.0	100.0	100.0
No. of respondents	(106)	(83)	(90)

* Unfinished or completed college education.
** Unfinished or completed high school education.
† Unfinished or completed elementary education.

burden to the city by further overpopulating the already overcrowded market for menial jobs.

While Table 41 suggests in general terms that rural migrants seeking employment in the city have relatively few specific skills to offer, occupational dislocation can be pinpointed more specifically. One way of doing this is to compare the type of jobs migrants had held in their places of origin with the job they were performing in Cebu City. Using Bacol's occupational prestige scale (Bacol 1971: 195-196) and classifying occupations into three levels (high, medium, low), Table 42 compares levels of the migrants' previous occupation with those of their present city occupation. Of the 93 migrants who reported a gainful occupation in 1975 and who had held a job in their places of origin, only a little more than one half (59.1 percent) stated that their pre-migration job level corresponded to their present job level (see diagonal of Table 42). Less than one fifth (18.3 percent) were holding higher-prestige jobs in Cebu City than they had been holding in their places of origin (upper right of Table 42), and 22.6 percent had lower-prestige jobs (lower half of Table 42). Expressed differently, 59.1 percent of all migrants had been able to maintain their occupational prestige, 18.3 percent had experienced upward mobility, and 22.6 percent, downward mobility.

TABLE 42
Percentage Distribution of Respondents* by Level of Occupation in Cebu City, and by Level of Occupation in Place of Origin, 1972

Level of Occupation in Cebu City	Level of Occupation in Place of Origin			
	High	Medium	Low	All Levels
High	33.3	5.6	0.0	3.2
Medium	33.3	41.7	27.8	33.3
Low	33.3	52.7	72.2	63.4
TOTAL	100.0	100.0	100.0	100.0
No. of respondents	(3)	(36)	(54)	(93)

* Only 93 migrants reported to have gainful occupations in both places of origin and places of destination.

On the surface, the figures do not look too bad considering that only one out of four migrants had to accept a lower-occupational prestige job in Cebu City. But, the figures become less encouraging when the upward and downward movers are examined more closely. The categories used in Table 42 are broad and details are hidden. Ninety percent of the upward movers had shifted from low-prestige occupations to middle-prestige ones, according to the occupational prestige scale used. While the scale indicates upward mobility, the jobs classified as medium-prestige jobs are relatively menial, i.e., *sari-sari* store owner, yeast dryer, fish vendor, basket weaver, shellcraft worker, and taxi driver. Only one of the respondents reported to have moved from a medium job (salesman) to a higher one (customs arrastre checker). Most of the migrants with low-prestige occupations in their places of origin had been farmers and fishermen. While they most probably had some expertise in these fields of endeavor, in Cebu City they had to accept the most menial jobs. Thirty-eight percent of them acted as household helpers, and 20 percent as security guards, sidewalk vendors, or bottle washers. According to the

occupational prestige scale these people had "maintained" their occupational status. There was as little actual upward occupational movement, as there was downward movement. Of the 31 migrants who had reported a medium-prestige job in the area of origin, 15 migrants worked as salesgirls, dressmakers, or weavers in Cebu City. About 40 percent of them had accepted jobs as household helpers in Cebu City. Overall, the occupational mobility indicated in Table 43 amounted to relatively little. Expressed differently, most migrants to Cebu City had few skills which the city economy could use, and their actual work in the city did not contribute much to productivity. From the viewpoint of the migrants themselves, few had succeeded in obtaining jobs which guaranteed much in terms of economic security.

The above findings based on the comparison of occupation in place of origin with that in Cebu City do not offer much support for the hypothesis that rural migrants suffer from occupational dislocation in Cebu City. A somewhat stronger argument in favor of that hypothesis emerges when city jobs are compared with level of education of migrants. The nine migrants who had some education or had completed a college education worked in business (4) or as sailor, mechanic, fighting cock tender, dressmaker, and filing clerk. The latter five occupations probably are not what these migrants had in mind when they went to college. Migrants with a high school education earned a living as security guards (7), household helpers (4), drivers (3), or as a fish vendor (1). Only two were in skilled jobs (tailor, carpenter), and three earned their living as checker, waiter, and nightclub dancer.

Social Problems

It was stated earlier that most migrants, especially individuals, preferred to remain in their present neighborhoods, regardless of physical conditions, because of their generally pleasant neighbors. However, when migrants were asked to compare neighbors in Cebu City with those in their places of origin in terms of friendliness and helpfulness, their judgements tended to favor their neighbors in their hometowns. Neighbors in the place of origin were, overall, judged as very friendly. Two thirds of the migrants explicity rated neighbors in their places of origin as such, and the rest of the migrants labelled these neighbors "friendly." Hardly anybody considered his/her earlier neighbors as "indifferent" or "hostile." During their initial stay in their present neighborhoods, the situation was less favorable for most migrants. Only one sixth of the migrants rated their city neighbors as very friendly and one in ten migrants considered these neighbors indifferent. Most migrants gave their city neighbors a rating of "just friendly" (see Table 43).

While none of the migrants felt that they had to cope with an adverse social environment upon their arrival in Cebu City, the atmosphere was, nevertheless, experienced as less satisfactory than it had been at home. However, over time the situation improved, as figures in Table 43 indicate. The proportion of neighbors judged as "very friendly" increased and the percentage of indifferent ones decreased. Since the question which migrants had to answer was an attitudinal one and since it is difficult to determine to what extent answers were influenced by nostalgia for their home towns, no clear conclusion can be drawn from the data as to which neighbors really were the "preferred" ones. What the data clearly indicate is that neighborhood relations did not present too big a problem for migrants, a fact supported by their desire to stay in their present locations.

In line with the distinction between "superficial" and "real" neighborliness made earlier, neighbor relations discussed in the above paragraph could be labelled as "superficial." "Real" neighborliness was manifested through actual help extended to the migrants. As can be seen in Table 44, 45 percent of the migrants never approached their neighbors for help, and 43 percent seldom did so. Migratory households tended to

TABLE 43
Percentage Distribution of Respondents by Neighbors' Attitudes, by Type of Neighbor, and by Type of Migrant, 1975

Neighbors' Attitude	Type of Neighbor								
	In Place of Origin			In Cebu City					
				Initially			Presently		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Very friendly	62.7	68.7	64.0	15.7	18.7	16.3	32.2	25.0	30.7
Friendly	36.7	29.7	35.3	72.9	72.0	73.3	62.7	67.2	63.7
Indifferent	0.4	1.6	0.7	11.4	6.2	10.3	5.8	6.2	5.3
Hostile	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)	(236)	(64)	(300)	(236)	(64)	(300)

TABLE 44
Percentage Distribution of Respondents by Frequency of Approaching Neighbors for Help, and by Type of Migrant, 1975

Frequency of Approaching Neighbors for Help	Type of Migrant		
	Individual	Household Head	All Migrants
Very often	3.8	3.1	3.7
Often	8.0	9.4	8.3
Seldom	33.1	78.1	42.7
Never	55.1	9.4	45.3
TOTAL	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)

rely on their neighbors somewhat more often than did individual migrants. Of the latter, 55 percent never approached any neighbor when they were in need. Instead, 35 percent of all the migrants, whether they had come as individuals or with their families, expected help from their relatives in their home towns. This observation apparently supports Jacobson's (n.d.) finding that there was relatively little "real" neighborliness displayed in Cebu City.

If we consider the seeking and giving of help in times of crises as a characteristic of primary relationships, the data show that, relatively speaking, primary relationships between city migrants and their present neighbors were scant, and that compensation had to be sought in continued contacts with relatives. The data at hand definitely confirm the hypothesis that primary relationships between migrants and their relatives are present and maintained.

Firth described the importance of the neighborhood as a primary unit of interaction for community life and the life of the individual as follows:

> Such primary groups are socially vital. They offer many kinds of personal satisfaction in opportunities of feeling secure amid group support, of exercising power over others, of showing skills and petty inventiveness in adapting things to immediate group needs, in getting gratifications of the moral kind through the display of love and self-sacrifice. They are essential also for cooperation in economic and other fields. (Firth cited in Jocano 1975: 176)

Communities in which rural migrants in Cebu City had to live did not quite meet these standards, and their falling short of being "communities" in the real sense was probably felt even more by the migrants because of the type of community which they were accustomed to in their areas of origin.

Type of Neighborhood and Neighbor's Attitude

Neighborliness needs time to develop. That it does so in Cebu City, at least when neighborliness is defined as "superficial," has been demonstrated in Table 43. But, acceptance of newcomers in a particular neighborhood may also be a function of the type of neighborhood a migrant moves into. Migrants who go into an area composed of long standing (old) residents may find it harder to be accepted than a migrant who settles with relatively recent fellow migrants. This hypothesis is based on the principle that people with similar interests tend to be more attracted to each other. To test this hypothesis, neighbors' attitudes were cross-tabulated with type of neighborhood (old-resident

neighborhood versus migrant neighborhood). Of the 300 migrant respondents, 241 had settled in migrant neighborhoods, and 51 in old-resident ones (eight respondents were unable to classify their neighborhood).

The neighbors' attitudes towards migrants, as Table 45 indicates, did not vary much with type of neighborhood. The proportions shown are basically the same as those in Table 43. This means that the attitude of neighbors, whether they were friendly or not, was not affected by the type of neighborhood the migrants lived in. When migrants were asked whether or not they believed they were accepted by their neighbors, those in migrant communities felt more accepted (97 percent) than those living in old-resident ones (88 percent) (see Table 46).

TABLE 45
Percentage Distribution of Respondents by Attitude of Neighbors, by Type of Neighborhood, and by Type of Migrant, 1975

Present Neighbors' Attitude	Type of Neighborhood					
	Migrant			Old-resident		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Very friendly	31.5	29.6	31.1	39.0	0.0	31.4
Friendly	64.2	63.0	63.9	56.1	90.0	62.7
Indifferent	4.3	5.6	4.6	4.9	10.0	5.9
Hostile	0.0	1.8	0.4	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(187)	(54)	(241)	(41)	(10)	(51)

TABLE 46
Percentage Distribution of Respondents by Feeling of Acceptance by Neighbors, by Type of Neighborhood, and by Type of Migrant, 1975

Acceptance by Neighbors	Type of Neighborhood					
	Migrant			Old-resident		
	Individual	Household Head	All Migrants	Individual	Household Head	All Migrants
Feels accepted	97.7	94.1	96.7	90.0	80.0	88.4
Does not feel accepted	2.3	5.9	3.1	9.1	20.0	11.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(173)	(51)	(224)	(33)	(10)	(43)

While the latter finding does not lend much support to the hypothesis that it is easier for migrants to become accepted in a neighborhood composed mostly of migrants, it raises the following questions: (1) what is the difference between friendliness and acceptance, and (2) what does this difference mean in terms of the distinction between "real" and "superficial" neighborliness? Earlier, it was stated that Cebu City migrants did not consider their social environment adverse ("superficial" neighborliness), and that there existed little "real" neighborliness among Cebu City neighbors (in terms of helpfulness). Assuming that the above findings are plausible, acceptance must be related to "superficial" neighborliness. One reason that social acceptance does not manifest itself in "real" neighborliness in terms of helpfulness may be that the latter, in the situation of the migrants, was a rather poor indicator of the former. In migratory neighborhoods most respondents were poor and though willing to help, they were unable to extend any material assistance to others. In addition, there was the tendency, likewise referred to earlier, that relatives either in the city or in the place of origin were the preferred source of assistance in times of need. Migrants apparently felt comfortable in this neighborhood, but close interaction developed by mutual help could not develop because individual families hardly had enough for their own needs.

Neighborhood Associations and the Migrants' Integration into the Urban Milieu

Voluntary associations organized by migrants with common provincial or regional backgrounds were found by Hart to exist in Manila. Referring to this type of organization, he believed that such groups must be of importance in aiding new migrants to adjust to urban life, to find jobs, to support them in times of crises, and to supply them with charitable services unavailable from urban agencies (Hart 1971: 130). In the present study none of the respondents knew of such associations. One reason for the absence of such organizations or the migrants' lack of awareness of these associations may be that the respondents were all "recent" migrants, and that there had not been sufficient time for groups of people coming from the same areas of origin to organize themselves.

Gutman observed that the newcomers in the United States tended to integrate themselves into an established community not through informal community networks but through participation in voluntary neighborhood associations (Gutman 1963: 175). Following this statement, it was hypothesized that participation of rural migrants in voluntary associations existing in their urban neighborhoods paves their way towards integration into their community. This hypothesis was tested in terms of the presence of voluntary associations in the neighborhood, and the extent to which migrants participated in them.

The data indicate that relatively few migrants were aware of the existence of voluntary associations in their neighborhoods. Of the 300 respondents, only 43 percent claimed any knowledge of these associations (see Table 47).

The proportion of heads of migratory households who knew about the existence of voluntary associations was twice as large as that of individual migrants, indicating that neighborhood affairs were more important for them than for their individual counterparts. For many of the latter, the neighborhood was just a place of work rather than a place of relatively permanent residence. Of those migrants who knew about these associations, less than one half participated in them. Most of the associations in which participation was claimed were of a religious nature. Although some 30 respondents claimed to have received some social benefits from their participation in these neighborhood organizations, this number is too small for us to conclude that these organizations were having any significant effect on the socialization process of the migrants (see Table 48).

The 67 migrants who knew about neighborhood associations but did not participate in them gave lack of interest and time and shyness as their reasons. Of the 170 who were

TABLE 47
Percentage Distribution of Respondents by Awareness of Neighborhood Associations, and by Type of Migrant, 1972

Awareness of Existence of Associations	Type of Migrant		
	Individual	Household Head	All Migrants
Yes	36.9	67.2	43.3
No	57.6	38.2	52.3
Don't know	5.5	0.0	4.4
TOTAL	100.0	100.0	100.0
No. of respondents	(236)	(64)	(300)

TABLE 48
Percentage Distribution of Respondents by Type of Neighborhood Associations, in Which 1972 Migrants Participated, 1975

Type of Associations	% of Migrants Who Participated in Associations
Religious	46.0
Social	25.4
Political	3.2
Educational	9.5
Economic	15.9
TOTAL	100.0
No. of respondents	(63)

aware of the existence of any association in their neighborhoods, 60 percent would not care to become a member. Only 67 out of the 300 migrants felt that such associations were needed to promote community welfare and foster friendship. Since numerous migrants claimed that they did not care for associations because of lack of time, their number of weekly working hours were compared with those of actual participants (see Table 49). Obviously, being busy was just an excuse; most respondents were either apathetic or did not find participation in these associations important or worthwhile.

Without attempting to draw a general conclusion as to the importance of voluntary neighborhood associations for the assimilation of migrants into their communities of destination, the Cebu data show that, at least during the early stages of life in an urban community, recent rural migrants did not obtain much support from, or give much importance to, voluntary associations.

SUMMARY OF FINDINGS

Consistent with what the NCSO data have indicated, Cebu City is a regional center for migration (Flieger and Koppin n.d.: 258). Most of the 1972 migrants to Cebu City originated from the provinces within the region, many from Cebu province itself. Relatively few migrants came from northern, western, and southern Mindanao.

TABLE 49
Percentage Distribution of Respondents by Participation in Neighborhood Associations, and by Number of Working Hours, 1975

No. of Weekly Working Hours	Participation in Neighborhood Associations	
	Yes	No
44 and below	25.0	20.9
45–49	36.1	41.9
60 and above	38.9	37.2
TOTAL	100.0	100.0
No. of respondents	(36)	(43)

Because of existing land pressure in most municipalities of the areas of origin, ruralites were primarily motivated by economic necessity to migrate to Cebu City. This fact is underscored by the migrants' reasons for migrating which were mostly related to employment and education. Other reasons given by migrants concerned marriage and family welfare. These findings support the earlier stated hypothesis that economic factors, like search for employment ("family welfare" reasons likewise have economic connotations as well), are the primary reasons for migration. Education and marriage-related reasons were only secondary in importance. Economic reasons were more prevalent among household migrants than individual ones; a good portion of the latter came to Cebu City for educational purposes. Heads of migratory households who gave education-related reasons most often came for the education of their children and less often for themselves.

Individual migrants to Cebu City were generally below 30 years old; heads of migratory households, by contrast, tended to be more middle aged.

The decision to migrate usually involved the immediate families of the migrants. Most migrants had at least obtained or asked for the permission of their families. Contrary to what was expected by the study, close family relationships were found to have only a minimal deterring effect on the migrants', particularly heads of migrating families' decision to migrate. Instead, most families were found to have favored migration. Apparently, deterring factors for migration, if any, were outweighed by economic necessities.

To a certain extent, information about better livelihood opportunities available in Cebu City, transmitted by migrants' friends or relatives, facilitated the migrants' decision to migrate. This finding conforms with those of Simkins and Wernstedt (1971). Among the individual migrants to Cebu City who came for educational reasons, prior information tended to be associated with migration. For heads of migratory households, a similar association was evident between information on job opportunities and migration.

The presence of relatives in Cebu City tended to reinforce the individual migrants' decision to migrate. The reason why these relatives' presence did not have a similar effect on the decision of heads of migratory households is perhaps because migratory households had a stronger need to migrate (in response to economic and educational pressures) than individuals, and they had to set up a household of their own in any case. In the individual migrants' case, most came to the city only after they had been assured that they had someone there whom they could rely on.

After the migrants' arrival in the city, relatives there acted as a source of aid when family, health, and financial difficulties were experienced. Except for family troubles,

this was particularly obvious for individual migrants. In addition, most individual migrants stayed with their relatives. On the other hand, migratory households relied on relatives in the city only in more extreme cases of family, health, or financial difficulties. In relatively many instances they sought the help of their urban friends and neighbors.

Migrants, in their efforts to improve their economic condition through urban migration, found themselves confronted by new and unexpected difficulties in Cebu City. These difficulties were largely environmental and economic and, to a lesser degree, social in nature. Environmental problems took the form of poor accommodations. Most household migrants living independently in Cebu City had to be content with poorly constructed houses at cheap rental rates in low-income neighborhoods. A good number of migrants had electricity and piped water in their homes.

A remarkable number of the migrants were aware of their poor living conditions, yet they preferred these over those in their areas of origin. But, none of the migrants manifested a desire to transfer to a better neighborhood. This lack of desire to transfer meant, in most instances, economic inability to do so.

Another difficulty which was encountered by many migrants was related to employment. Migrants who were unable to find employment immediately upon arrival tended to be a burden to either their relatives in the city or families in their areas of origin, who temporarily shouldered their costs of living in Cebu City. Those who were able to immediately find employment did so in the most menial occupations. Their jobs had to be menial because most of them had little or no education at all. These jobs required long working hours and offered little remuneration. As far as these two items were concerned, heads of migratory households were somewhat better-off than their individual counterparts. However, when the former's earnings were divided among their family members, their income turned out to be much lower than that of the individual migrants. One fifth of all employed migrants experienced downward occupational mobility in Cebu City. For those who achieved upward mobility, a detailed analysis revealed that this mobility amounted to relatively little, since most of the occupations these migrants shifted to were only menial ones.

The precarious financial status of migrants was reflected in their low purchasing power, manifested in their tendency to buy on credit, especially among the migratory households. Notwithstanding those precarious economic conditions, migrants considered their present economic status an improvement over their conditions prior to migration.

Coping with the city's social environment did not appear to be too difficult a task for the migrants since the environment was generally not experienced as adverse. The reason for this was that urban neighbors were generally friendly to the migrants. The hypothesis that migrants would face social difficulties in Cebu City was confirmed only to the extent that "real" neighborliness, measured in terms of helpfulness, was not in evidence among urban neighbors. Nor did joining voluntary associations act as an adjustment tool for migrants, as Hart (1971) had theorized. Very few of the migrants were members of any kind of association or even aware of their existence. This was probably so because they were "recent" arrivals in the neighborhood. Most of the few who were members belonged to migratory households, which may be indicative of the fact that for them the neighborhood was of some importance, while for individual migrants it was just a place for temporary residence. As hypothesized, integration into an urban community tended to be easier in a neighborhood consisting mostly of migrants than in communities composed of old residents.

POLICY IMPLICATIONS

The areas in which migrants need most urgent help concern their physical and economic environment. Social relations, although essential for the functioning of real communities

(Jocano 1975: 176) may, for the moment, be given less priority since they are not experienced as adverse by the migrants.

Policies designed to alleviate the migrants' physical and economic plights have to be formulated with two types of recipients in mind: the actual and the potential migrant. For actual migrants, a need to provide low-cost housing complete with basic sanitary facilities is most urgent. The city government has recognized this only to a certain extent since it considers housing development and relocation of squatters only as point "eight" on its list of priorities (Cebu City Development and Planning Staff 1975). In its aim to "upgrade, rehabilitate, and improve substandard housing in squatter areas," the city administration has proposed the construction of high-density condominium or tenement type of housing in Pasil, Ermita, and Villagonzalo (three of the most densely populated squatter settlements in Cebu City) and the planned Cebu South Reclamation Area. In addition, the city plans to acquire suitable sites for the relocation of squatters (Cebu City Development Staff 1975). Tentatively being considered as relocation sites are some areas in the municipalities of Talisay and Minglanilla.[12]

The first proposal seems to be in line with the "sites and services" policy formulated by the United Nations which aims to relocate urban squatters in areas which are close to their place of work and which are equipped with sewage, paved roads, and other infrastructure components (Hollnsteiner n.d.: 106). However, caution must be exercised in designing these proposed dwelling units. Tenement housing was found impractical in Manila partly because the structure of the building jeopardized social relations among dwellers. In addition, many did not want to occupy the upper floors because of inconvenience, additional needs created, and risks small children had to undergo (Hollnsteiner n.d.: 106). Construction of condominiums or tenement type buildings is, therefore, not advisable. Another type of housing project for squatters, the *Kapitbahayan,* may be a better solution. This design concept which is now being made available for some Tondo residents in Manila consists of a cluster of four two-storey buildings, each occupied by four families (Maramag 1976: 8).

In so far as relocating squatters are concerned, the "sites and services" policy alone is not enough. Referring to this program, Hollnsteiner suggests that relocation would be effective only if it provides many real economic opportunities for largely unskilled workers. Otherwise the relocated squatters will go back to their old residences (Hollnsteiner n.d.). The Cebu City Planning Office was apparently unaware of this when it proposed the relocation of squatters to Talisay and Minglanilla, towns relatively far away from the center of the city. Unless the areas to which squatters will be relocated can offer them job opportunities and give them a chance to engage in some economically productive activities, relocation plans are in danger of failing. Only those people who can afford suburban living will be attracted to, and permanently settle in, the fringe areas of the city. It seems important that, for Cebu City, economic development of proposed relocation sites must precede actual relocation activities.

In line with the idea of Hollnsteiner are the recommendations made by the subgroup on population during the 1976 international meeting "The Survival of Humankind: The Philippine Experiment" which was held in Manila. At this conference, it was pointed out that slum and squatter areas perform an important economic function for the migrants. In many instances, these types of housing are the only ones that most migrants can afford. Since they are located where job opportunities are most likely to be found (near the harbor, or in the heart of the city), they serve as a clearing house for the newcomers to make their first contacts with the labor market. In most cases, the slum and squatter areas are used as transitory residences which the migrants will leave once their economic

[12]Information supplied by the management analyst and sociologist of the Urban Planning and Development Office, Cebu City.

condition improves. To just remove them from squatter communities means to deprive migrants of the possibilities to make these first contacts. What is needed is not simply a removal of unsightly settlements but the creation of facilities which serve the same economic function as the slum and squatter areas.

To improve the economic status of migrants is the most difficult task and probably one that will take the longest time. This is so because migrants are caught in a vicious cycle. They are poor because their jobs, which are their main source of income, are menial; the jobs have to be menial because the migrants are unskilled. The private or public sectors' helping capacity, in so far as actual migrants are concerned, is only limited to establishing manpower training programs and hastening the economic development of Cebu City and other adjoining areas. Along with the development of urban growth centers, Poethig has proposed manpower training programs which should relate to actual job opportunities and to industries that are using the resources of the region (Poethig 1972). In Cebu City, manpower training programs have already been recommended by the City Planning Office, and are slowly being implemented. The framework plan of the city of Cebu calls for the recruitment of the squatters in job training programs to enable them to be employed gainfully (Cebu City Development and Planning Office 1975). This has to be intensified and the skills that should be taught must be those that are useful and demanded by Cebu City's labor market. Training programs will give migrants, who decide to remain in Cebu City, a chance to acquire those skills necessary for obtaining a useful occupation and the opportunity for occupational mobility.

Economic development of the Greater Cebu City Area will result in increasing labor demands which will benefit migrants who have not been absorbed in the labor force so far. The development of peripheral city areas through relocation of industrial establishments will make these areas attractive to migrants. It may also result in a wider distribution of migrants over a larger area. In addition, it will give migrants an opportunity to move out of the congested core areas of Cebu City to start a new existence.

The Greater Cebu City Area is envisioned to include the cities of Mandawe, Danao, and Lapu-Lapu, plus the municipalities of Talisay, Minglanilla, Naga, Compostela, Consolacion, Liloan, and Cordova. The mining industry located in Danao City and the cement factory in Naga, if further developed, could provide job opportunities for unemployed migrants. New resources found in the municipalities surrounding Cebu City should be tapped and their industries harnessed. At present, the beaches of Talisay, Minglanilla, and Liloan are commercially operated as resorts. If further developed, they could boost tourism and increase income, aside from creating new jobs. The municipalities leading to the north of Cebu are engaged in small-scale baked-food production. Some residents of Minglanilla are in the business of making ready-to-wear dresses. These existing industries should likewise be further developed. This could be done by providing the necessary capital that could improve both the quality and quantity of production. In addition, help has to be given to secure market outlets for the products.

Manufacturing industries are essential for the economic development of an area. They stimulate the development of other commercial and business activities. Moreover, the revenues which they yield are very useful to the local government in its own development efforts. Presently, factories are concentrated in Mandawe City, a fact that has accounted for the relatively high level of development of that area. In order to extend development to other places and to fully develop the Greater Cebu City Area, factories should be fanned out to other areas, especially those leading to the south as, for instance, the towns of Talisay and Minglanilla.

The towns included in the Greater Cebu City Area could be developed as resettlement sites for those who can afford suburban living. Creating more subdivisions in these areas should be encouraged. The plan to motivate and assist larger companies, whether private

or public, to set up their own housing projects for the benefit of their low-income employees (Cebu City Development and Planning Office 1975), would greatly facilitate relocation of some families to the fringe areas. The vacancies generated by the transfer, will, in some measure, give opportunity to the city to clean up its slum areas.

To deflect the excessive migratory flow to Manila,[13] Poethig formulated a strategy that called for the development of other urban growth centers. For the Visayas Region, he recommended the development of Cebu City (Poethig 1972). Unfortunately, this study has indicated that the absorbing capacity of Cebu City in terms of housing and labor is likewise limited and already overtaxed. In view of this, the need to control migration seems to be as important for Cebu City as for Manila. Unfortunately, the need to control migration to Cebu City is not being considered at all in the framework plan of the city. An extension of Poethig's policy recommendation seems in order, i.e., the development of other growth centers besides Cebu City in the Visayas Region.

Abenoja has observed that the extremely high level of development of Cebu City and its central location relative to areas of low- and medium-development levels is one plausible explanation for its extensive dominance in the province of Cebu and for its influence in the Visayas Region (Kilaton-Abenoja 1975: 67). To prevent excessive cityward migration and stimulate return migration, Abenoja proposed a balanced national development scheme through regional planning that would give attention to both the development of growth places and the surrounding areas in the region, especially those towns which at present are very slightly developed (Kilaton-Abenoja 1975: 97).

In the development of certain growth centers in the region, it is recommended that the spatial location of growth centers relative to less developed places be considered in the planning process. This has to be done to accomplish a relatively equal redistribution of the population within the region. There is, therefore, a need to develop other growth centers aside from existing cities in the Visayas. To this effect, growth centers should be developed in areas composed of municipalities of low complexity. Municipalities or cities with a medium level of complexity and functioning as secondary centers of the province are the most suitable candidates for development. One factor that should determine how many growth centers a province or region should have is the number of people who go to these centers for particular needs. Since growth centers are home grounds for industries and, as such, are labor-absorbing areas, this recommendation would result in a relatively equal distribution of economic opportunities.

Since it has been found that the direct curtailment of urban migration is difficult to achieve (Cariño n.d.: 23), another effective way of controlling the influx of people may be to discourage unskilled rural folks from migrating into urban areas by encouraging them to avail of the resources in their home towns and assisting them in making these resources productive. Discouraging unskilled ruralites from moving to the city needs a good amount of propaganda concerning the difficulties that unskilled migrants are likely to meet in the city. In some ways, this is what the Human Settlements Task Force has been doing. It is recommended that this drive be intensified by making use of all channels of communication that can reach the persons concerned.

In order to encourage ruralites to stay in their areas of origin, the government has to intensify programs designed to relieve the economic pressures in rural areas by maximizing production in agriculture and other rural industries. To achieve this, farmers must be given lands capable of production. In addition, better methods of farming must be taught and capital must be made available to farmers. Finally, farmers have to be assisted in the marketing of their products. The island of Cebu, for example, is

[13]The 1970 Census found that in 1970 half a million of the people living in Manila had resided elsewhere in the country ten years earlier, unpublished data (Office for Population Studies, University of San Carlos).

the most denuded province in the country (Gapas n.d.). Because of this, the province is losing much of its water, an important element for both man and plants. A massive reforestation campaign is urgent. These last recommendations for maximizing production are all implied in the country's Land Reform Program, and somehow, have started to be implemented through the supervision of the Department of Local Government and Community Development. What is actually needed is a more serious and extensive implementation of these policies. If these policies are given priority and are vigorously pursued, rural areas can become economically sufficient and, as a consequence, cityward migration will be reduced.

The data in this study have shown that a considerable number of migrants to Cebu City are students. To redirect the migratory flow of students into Cebu City in order to decrease the volume of migration, it might be wise to adopt an urban policy similar to that proposed by the Metropolitan Manila Governor. The proposal seeks to thin out colleges and universities in the Manila Area and to transfer them to outlying regions as a way of preventing further congestion of the metropolis. This may be achieved by setting up a ceiling for enrollment in city colleges or universities, and by motivating larger and more established schools to branch out to the province (*Bulletin Today*, 4 March 1976). For Cebu City, it seems, the latter would be practical only after peripheral city areas have achieved a higher degree of economic development. Such a move in the future would not only help to decongest the city but it would make education cheaper for rural students by freeing them from the need to travel to and live in the city.

Obviously, it is very difficult to formulate policies which prevent migration and yet do not impinge upon the individual's rights and prerogatives to move around freely. However, the problems resulting from an unbalanced concentration of people in urban areas demand the control of the otherwise free movement of people. Presidential Decree Number 79, which defines the Philippines Population Policy, outlines the objectives of the Commission on Population. One of these objectives is to "prepare policies and programs that will guide and regulate labor force participation, internal migration, and spatial distribution consistent with national development" (Population Center Foundation of the Philippines [PCF] 1976). The PCF believes that "only if the Commission on Population addresses itself to questions of spatial distribution will it be able to contribute strategically to the solution of problems like the proliferation of slums, the lack of housing facilities, traffic congestion, and pollution (PCF 1976). If, in the long run, the indirect regulatory measures proposed prove ineffective, a more strict and direct way of curtailing urban migration can be expected.

RELOCATION AND POPULATION PLANNING: A STUDY OF THE IMPLICATIONS OF PUBLIC HOUSING AND FAMILY PLANNING IN SINGAPORE

Tai Ching Ling

Like most developing countries, Singapore faced a series of social and economic problems in the fifties and sixties. Among these problems were unemployment, rapid population growth, housing shortage, and the deterioration of living conditions in the slum areas of the city center and the suburbs. In the 1950s, Singapore witnessed an unemployment rate of more than nine percent and an annual population growth rate of about five percent (Shaw 1976: 110, 114). Many people in Singapore were living in totally substandard houses, and more than half of the residents in the city center lived in cubicles which had no corridors and where sanitary conditions were often inadequate (Chen and Tai 1977: 13-18).

Today, Singapore has achieved full employment for its working population and employs nearly 100,000 foreign workers, most of whom are in the manufacturing and construction industries. Singapore has successfully regulated its population growth rates, and in the late seventies reduced the annual growth rate to around 1.2 percent. The housing problem has been impressively solved by undertaking large-scale public housing programs. Today, about 70 percent of Singapore's population are living in public housing estates.

The success of its family planning and public housing programs has made Singapore the object of great attention among policy makers and social scientists concerned with population and housing problems. Population and housing are two interrelated problems. However, they have often been treated as separate issues by social scientists and have usually been tackled independently by policy makers in the process of national development. In Singapore, population and housing problems have been taken seriously and tackled comprehensively through an integrated national development program. The government has acted boldly and imaginatively in devising policies to regulate population variables and to undertake massive urban renewal and public housing programs. The Singapore experience is an important example of how a determined government can tackle the difficult issues of population and housing in a very short period of time.

The first part of this paper discusses the population and housing problems faced by Singapore and how the government has tackled these problems. The second part focuses on the impact of relocation on families in public housing estates based on the findings of a survey conducted in nine major public housing estates in 1980.

POPULATION GROWTH AND HOUSING CONDITIONS

Until recently, Singapore's population had always tended to grow faster than the government's ability to provide adequate employment and accommodation. Since the beginning of this century, the population of Singapore has increased more than ten times. In the 1901 census, Singapore had a total population of 227,592. The figure increased to 2,413,945 in the 1980 census. Table 1 presents the population figures and

TABLE 1
Population Growth of Singapore, 1901-1980

Year	Population	Intercensal Increase	Annual Growth Rate (%)
1901	227,592	45,980	2.3
1911	303,321	75,729	2.9
1921	418,358	115,037	3.3
1931	557,745	139,387	2.9
1947	938,144	380,399	3.3
1957	1,445,929	507,785	4.4
1970	2,074,507	628,578	2.8
1980	2,413,945	339,438	1.5

SOURCE: Census Reports.

growth rates from the 1901 census to the most recently held census of 1980. Table 2 shows the detailed population and vital rates for the period 1951-1980. As shown in Tables 1 and 2, the population growth rates in the fifties were very high. The annual growth rate between 1947 and 1957 was 4.4 percent, the biggest intercensal growth rate since 1901. This rate placed Singapore among the countries with the highest growth rates in the world.

The rapid population growth rates during the years before 1960 escalated the problems of overcrowding and housing shortage to critical proportions, although Singapore had faced these problems as early as the beginning of this century. Moreover, the heavy concentration of population in the Central Area of the city made the housing problem unmanageable. The resultant overcrowding and housing shortage not only caused serious health problems, such as the high incidence of tuberculosis in the 1940s and 1950s, but also caused political and social problems. As will be discussed in the later part of this paper, the provision of low-cost housing for the low-income families was, therefore, probably the only common platform of all political parties participating in the first general election in 1959 when Singapore obtained its self-governing status.

As reported by the Housing Committee, during the pre-war years housing conditions in Singapore were among the worst in the world. Many families could not afford to pay rent for individual houses, and consequently there was a general subdivision of housing spaces into cubicles. This further aggravated the overcrowded conditions, and led to "a high percentage of sickness and a high rate of mortality" (The Housing Committee 1948: 2).

During World War II, thousands of houses were destroyed and there was no proper control of building during the period of the Japanese Occupation. As a result, thousands of people constructed their own unauthorized houses and dwellings. By the end of the war, tens of thousands of people were living in huts made of *attap*,[1] old wooden boxes, rusty corrugated iron sheets, and other such salvaged materials. They lived in congested squatter settlements with "no sanitation, water, or any elementary health facilities" (Seow 1965: 11).

The critical situation of overcrowding and substandard living conditions was accelerated by the big inflow of immigrants from China, India, and Peninsular Malaysia immediately after the war, and the high birth rates in the fifties. Widespread substandard

[1] *Attap* is a kind of thatch used for roofing houses.

TABLE 2
Population and Vital Rates of Singapore, 1951-1980

Year	Population (in thousands)	Crude Birth Rate	Crude Rate of Natural Increase	Annual Growth Rate
1951	1,068.1	45.0	33.4	4.5
52	1,127.0	45.4	34.7	5.5
53	1,191.8	45.8	36.1	5.7
54	1,248.2	44.7	37.1	4.7
55	1,305.5	44.3	36.2	4.6
56	1,371.6	44.4	36.9	5.1
57	1,445.9	42.7	35.3	5.4
58	1,518.8	41.1	34.2	4.7
59	1,587.2	39.4	32.9	4.0
60	1,646.4	37.5	31.3	3.5
1961	1,702.4	35.2	29.3	3.0
62	1,750.2	33.7	27.9	2.6
63	1,795.0	33.2	27.5	2.5
64	1,841.6	31.6	25.9	2.5
65	1,886.9	29.5	24.1	2.5
66	1,934.3	28.3	22.9	2.3
67	1,977.6	25.6	20.3	2.0
68	2,012.0	23.6	18.0	1.6
69	2,042.5	21.8	16.8	1.5
70	2,074.5	22.1	17.0	1.7
1971	2,110.4	22.3	16.9	1.7
72	2,147.4	23.1	17.8	1.8
73	2,185.1	22.1	16.6	1.7
74	2,219.1	19.5	14.2	1.4
75	2,249.9	17.8	12.7	1.3
76	2,278.2	18.8	13.7	1.4
77	2,308.2	16.6	11.5	1.2
78	2,334.4	16.9	11.7	1.2
79	2,362.7	17.3	12.0	1.2
80	2,413.9	17.1	11.9	1.2

SOURCES: Census Reports and Yearbooks of Statistics.

living conditions and the resultant health and social problems in the post-war period were reported by Goh (1956) and Kaye (1960).

The Housing Committee formed in 1947 reported that the housing shortage had reached "famine proportions." The slum conditions were associated with high incidence of crime and health hazards. For example, the tuberculosis death rate in Singapore was 235 per 100,000 population in 1947, as compared with London's rate of 63 per 100,000 in 1946 (The Housing Committee 1948: 1). Moreover, there were more than 100,000 people, comprising more than ten percent of the total population, living in squatter settlements with no sanitation or any elementary health requirements in the municipal area. It was literally physically impossible to evict these people as they had nowhere else to go.

In 1953, the first comprehensive survey of urban housing and living conditions was conducted by the Department of Social Welfare. The findings showed that less than one fifth of the survey households had exclusive occupation of the house they lived in. More

than four fifths of the households had to share their houses with others. Twenty-three percent of the surveyed households were living in houses shared by 11 or more households. In the congested areas of Singapore, the home of a family often consisted solely of a cubicle or a room. Shophouses and terrace houses were partitioned into cubicles, often up to five, six, or even more to a floor. Kitchens, bathrooms, and lavatories were shared by all households living in the house (Goh 1956: 61–81).

These findings were confirmed by another sociological study of housing conditions in the densely populated area of Upper Nanking Street conducted by Barrington Kaye in 1956. Kaye described the living conditions in this part of Chinatown as "among the most primitive in the urban areas of the world" (Kaye 1960: 5). Houses in Upper Nanking Street were all shophouses. The majority of these shophouses were divided internally, on the first and second floors, into living cubicles. In addition, there were usually one or two cubicles behind the shop on the ground floor.

The overcrowded situation and substandard living conditions of the street described by Kaye were typical for almost the whole central business district, which amounted to about 1.2 percent of the total land area of the then colony. Within this area one quarter of the total population of Singapore lived.

PUBLIC HOUSING AND FAMILY PLANNING

As discussed in the preceding paragraphs, the housing shortage and unemployment reached an alarming state and became serious social and political issues, which demanded that immediate action be taken by the government. When Singapore achieved internal self-government in 1959, the People's Action Party (PAP) government, which has remained in power since then, gave top priority to solving the housing and unemployment problems. Thus, large-scale public housing programs were undertaken. At the same time, family planning and comprehensive industrialization programs were implemented to tackle the unemployment problem.

Immediately after assuming power, the PAP government set up the Housing and Development Board (HDB) in February 1960 to undertake large-scale public housing programs to provide low-cost high-rise housing for the lower-income families. Since the inception of the HDB, four Five-Year Building Programs have been successfully completed.

The demand for HDB flats was great and has increased substantially since 1968. Therefore, the target for the Third Five-Year Building Program (1971–1975) was fixed at 100,000 units. As a result of the rapid increase of prices for private housing and the increasing demand for public housing in 1973, another 13,000 units were later added to the target to be completed by 1975. By the end of 1975, a total of 113,819 units of flats were completed. The target for the Fourth-Year Building Program (1976–1980) was set at 150,000 units of housing. By March 1980, the HDB had built a total of 334,444 units of high-rise flats, and more than 67 percent of the total population in Singapore were living in public housing estates (HDB 1980: 50) (see Table 3).

At present the HDB is building about 30,000 dwelling units per year. By 1992, when the urban development program as proposed in the Comprehensive Plan is completed, about 80–85 percent of Singapore's population should be living in high-rise public housing estates.

As a result of the impressive public housing programs during the past two decades, overcrowding and housing shortage problems have been solved and living conditions have improved tremendously. The success of the housing program is partly due to the large number of public housing flats built by the HDB and partly due to the comprehensive family planning programs which successfully reduced the fertility rates and the population growth rates in recent years.

TABLE 3
HDB Units Built and Proportion of Population Living in Public Housing Estates

Year	Cumulative No. of Units	% of Population Living in Public Housing
1965	54,430	23.2
1970	120,669	34.6
1975/76*	242,076	51.0
1977/78*	280,828	60.0
1978/79*	311,849	64.0
1979/80*	334,444	67.0

* From April of the year to March of the following year.

SOURCES: Housing and Development Board, *Annual Reports 1973/74*, p. 12; *1975/76*, p. 69; *1977/78*, p. 52; *1978/79*, p. 48; *1979/80*, p. 50.

Population is an important variable which contributes to the increasing demand for housing. Therefore, population is a crucial factor in housing as well as urban planning. The overall planning and policy for housing and urban development in Singapore was first guided by the Statutory Master Plan, which covered a 20-year period from 1953 to 1972, and most recently by the Comprehensive Plan (also known as the Concept Plan) covering another 20-year period from 1973 to 1992.

During the early 1950s, when Singapore faced problems of rapid population growth and overcrowding in the Central Area, guidelines of the Master Plan for housing and urban development were characterized by recommendations to decentralize urban population by reducing the population living in the Central Area by one sixth and relocating this portion of the population in the new satellite towns some distance from the Central Area. The Master Plan was, however, considered by the PAP government as conservative due to the limited aspirations of the colonial government because it did not allow for rapid political and economic changes that were to take place in the 1960s. A major planning project to work out another long-range Comprehensive Plan for urban development was, therefore, begun in 1967 with the assistance of the United Nations Development Program (UNDP). This planning project was completed in October 1971 and the Comprehensive Plan was produced. The Plan was designed to accommodate a population of four to six million. As pointed out by the Project Manager, the Plan "can accommodate a four-million population at quite reasonable densities. In fact, it could accommodate over six million, but at considerably higher densities" (Doudai 1971: 7).

As the population growth rates had dropped drastically in the seventies, it was projected that Singapore's population would never go beyond four million and would be stabilized at about 3.4 million by the year 2030. Subsequently, the population densities in most newly developed public housing estates have been reduced.

The sharp decline in annual population growth rates in recent years has been due mainly to the success of family planning programs. Since the early 1960s the Singapore government has recognized the fact that population growth is not an isolated social phenomenon but one that is closely related to the overall national development program. To solve the housing shortage and unemployment problems seriously confronting Singapore in the fifties and sixties, the government took bold and firm action to regulate the population size of the country. Towards this end, a series of unique population policies and social disincentives were introduced and implemented thoroughly and effectively.

Studies on the impact of these social disincentive policies on the fertility behavior of Singaporeans have been conducted by Chen (1977), Chang (1981), Hassan (1980), Wong and Salaff (1979), and Wan and Saw (1974). Although there are varied conclusions derived from these studies, all their findings confirm the fact that these disincentive policies have greatly affected the Singaporeans' fertility behavior and have served as important deterrents to having large families.

SOCIAL AND POLITICAL IMPLICATIONS OF PUBLIC HOUSING

The sharp decline in population growth rates in recent years is an important variable which favorably affected the development of public housing programs in Singapore. However, the success or failure of public housing programs is determined by a complex set of social, economic, and political factors. In many western countries such as the United States, public housing has been a great failure and has become a political issue critical to the authorities concerned or the government in power. On the other hand, public housing in Singapore has become a proud symbol of national development and the success of public housing programs in the past twenty years has been a salient factor which contributed a great deal to the electoral triumphs of the PAP and the stability of the social and political systems in Singapore.

At present, more than 67 percent of Singapore's population are living in public housing estates. This figure will increase to about 80 to 85 percent in 1992, when the Comprehensive Plan for urban development will have been completed. The large-scale public housing program in Singapore does not only include the building of HDB flats for the people. It also involves or affects, directly and indirectly, many other dimensions of national development such as construction activities and, particularly, the localization of industrial estates, transportation networks, community centers, shopping complexes, schools, churches and mosques, and sports and recreational facilities.

Since the beginning of this century, several committees have been appointed by the government to study housing problems and to recommend measures to solve these problems. One unanimous recommendation of all these committees is that low-cost public housing should be provided for the lower-income families. It is also recognized that "housing the poorer classes of the community is unprofitable, or at any rate not financially attractive." Therefore, "the housing of these classes should primarily be a matter for a public building authority which would work at a very small rate of profit, or even, if necessary, at a loss" (Sennett 1948: 3). This suggestion is fully accepted by the present government, which gives top priority to the public housing program because it recognizes that the development process "is at once social, economic, and political and that the linkage effects between the three are indeed profound" (Yeh 1972: 182). In this section we shall discuss some salient effects of the public housing program.

Probably the most obvious effect is the redistribution of income. One of the objectives of public housing is to provide low-cost housing for low-income families. The monthly household income ceiling for those applying for HDB flats was fixed at S$800 in 1961. This figure was subsequently raised to S$2,500. As a result, in 1977 the average monthly household income for all public housing households was S$738, compared to S$1,060 for households of all other types of housing and to S$866 for the total households in the whole republic (Singapore, Department of Statistics 1978). As the per capita GNP rose from S$1,330 in 1960 to S$9,293 in 1980 — an increase of more than seven times in 20 years — more and more people became ineligible for HDB flats. In 1975, therefore, the government set up another body, the Housing and Urban Development Company (HUDC), to build HUDC flats for the middle-income groups. The monthly family income ceiling for eligibility to buy HUDC flats was S$4,000. In April 1980, this was increased to S$6,000 (*Straits Times*, 14 April 1980).

HDB flats are highly subsidized by the government and are built for low-income

groups.[2] Consequently, public housing programs have become a most effective measure for income redistribution, diverting the wealth from the rich to the poor.

Another striking effect of the public housing program is the shift in the recent years of large proportions of land ownership from private entities to the government. The HDB has been entrusted under the Lands Acquisition Act of 1966, to acquire lands for the Board's building, urban renewal, and related programs. Under this Act, any piece of private and commercial land can be compulsorily acquired by the government. Consequently, many private lands have been acquired this way by the government for public housing development. In fact there has been a sharp rise in government ownership of land in Singapore in the past two decades. In 1960, government ownership of land was 44 percent. The figure rose to 67 percent in 1979 (*Straits Times*, 19 April 1979).

Other effects of large-scale public housing programs are on employment and economic growth. In the sixties when Singapore was faced with massive unemployment, large-scale public housing programs contributed significantly to solving the unemployment problem. It was estimated that the building of 10,000 units per annum would create 15,000 jobs directly and indirectly. At present, the HDB is building about 30,000 units of flats per annum and Singapore has achieved full employment. The majority of construction workers are, however, foreign workers. Employment opportunities were also created with the establishment of large numbers of light industries within and around HDB estates. In addition, the construction activities of the HDB also generated a substantial demand for construction materials. A large number of factories manufacturing building materials such as steel, cement, plywood, paint, bricks, hollow blocks, sanitary fittings, and ironmongery were established to meet the demand for building materials generated by the HDB building programs.

Finally, since 1955 public housing has been an important election issue in almost all general elections. The PAP government has made public housing a top priority for national development since 1960, and PAP candidates in almost all general elections or by-elections have made maximum electoral usage of the Party's achievements in public housing.

In his statement on the eve of the 1972 general elelction, Prime Minister Lee Kuan Yew announced that the HDB would soon raise its annual building target from 20,000 to 30,000 units and that the government would turn Singapore into a metropolis that would be the best in the tropics (*Straits Times*, 2 September 1972). In the 1976 general election, Lee Kuan Yew referred to the disastrous fire that took place in 1961 and stated: "It gave us the chance to start a building programme which today has 225,000 flats, over half of which are sold to the people who live in them." He further added that "no other place in Asia outside Japan can do this or has done this" (*Straits Times*, 17 and 19 December 1976). In his eve of poll broadcast, Lee Kuan Yew stressed that the government would do away with slums in the next ten years and create more investments and jobs so that "each of you can own your home and have your family brought up in healthy and gracious surroundings" (*Straits Times*, 23 December 1976).

In the 1980 general election, the government announced that Central Provident Fund (CPF) members would be allowed to use their CPF savings to purchase private houses

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[2]As public housing flats are built for lower-income groups, the rentals of HDB flats are heavily subsidized and the selling prices of the flats are fixed below cost. On the average, the HDB subsidizes each three-room flat by 44 percent (S$4,600), a four-room unit by 33 percent, and a five-room unit by 27 percent (*Straits Times*, 30 May 1980). This includes mainly the cost of construction; the value of land is normally not calculated. Compared to private flats, the selling prices of HDB flats are about 60 to 70 percent cheaper. The selling prices of five-room improved HDB flats, which have an average floor area of 123 square metres (1,330 square feet), are between S$58,500 and S$99,990 depending on the location. For a similar type of private flat, the price is between S$250,000 and S$350,000 depending on the location and supporting facilities in the estate. Rentals of HDB flats compared to private flats are also very much lower. For example, rental for a four-room improved HDB flat, which has an average floor area of 83.5 square metres (900 square feet), is S$145 per month. For a similar type of private flat, the rent is well above S$500.

and commercial buildings in June 1981. This announcement had significant effects on the rising prices of private and commercial buildings, such that the PAP again won all the 75 seats in Parliament, its fourth clean sweep of a general election since 1968 (*Straits Times*, 24 December 1980). Five months after the election, the government announced that starting 1 June 1981 (the same day people could begin to use their CPF savings to purchase private houses) prices of HDB flats would be increased by an average of 38 percent and those in the city center by a massive 72 percent (*Straits Times*, 17 May 1981). It was pointed out by the Minister for National Development that prices of HDB flats would henceforth increase annually and that the cheap public housing era was over. The HDB would, however, continue to build large numbers of public housing flats for the population (*Straits Times*, 25 May 1981).

RELOCATION AND POPULATION MOBILITY

As a result of large-scale urban renewal and public housing programs, many families were affected by the resettlement schemes and relocated in public housing estates. During the period 1960–1980, a total of 146,866 squatter cases were affected by the resettlement programs. These relocated cases included households, farmers, shops, and industrial establishments. The majority (66.8 percent) of these cases were households. The other cases amounted to another 33.2 percent (HDB 1980: 60). Out of all the relocated cases, 89,263 (60.8 percent) were rehoused in HDB flats, 2,955 (two percent) were moved to resettlement areas, and 54,648 (37.2 percent) found their own accommodations (see Table 4).

Although the majority of the resettlement cases cleared by the resettlement program are for public housing development, the program also serves to clear land for redevelopment by other government bodies such as the Public Works Department, the Urban Redevelopment Authority, and the Port of Singapore Authority. For example, among the total 18,052 squatter cases cleared by the resettlement schemes in the fiscal year 1979/80, 12,781 cases (71 percent) were for public housing development by the HDB, 2,163 (12 percent) for road schemes by the Public Works Department, 416 (two percent) for Urban Redevelopment Authority projects, 835 (four percent) for the Land Office, 409 (two percent) for the Ministry of the Environment, 526 (three percent) for sprucing up projects, 358 (two percent) for the Ministry of National Development, and 564 (four percent) for other authorities (HDB 1980: 48).

The relocation process and public housing programs over the past two decades have accelerated urban development, reshaped the urban environment, and changed the patterns and spatial distribution of human activities in Singapore. One of the remarkable changes has been the moving "up" of the population from low-rise to high-rise housing. Another significant change has been the moving "out" of the population from the Central Area of the city. The third change has been the concentration of the population in public housing estates of the new towns.

Before the implementation of the large-scale public housing programs in 1960, the majority of the population were living in *attap* and zinc-roofed houses and shophouses, and very few people lived in high-rise flats. Table 5 shows that as late as 1966, 30.9 percent of Singapore's total households resided in *attap* and zinc-roofed houses and shophouses. This figure dropped to only 18.4 percent in 1977, whereas the percentage of households residing in high-rise public housing flats increased from 25.4 percent in 1966 to 60.2 percent in 1977. In contrast, the percentage of households residing in bungalows, semi-detached houses, and terrace houses increased slightly and the percentage of households residing in private flats remained almost unchanged.

In 1960, only nine percent of Singapore's population lived in public housing flats. The figure increased to 67 percent in 1980 and will continue to rise to about 80–85 percent by 1992. All public housing flats are high-rise buildings with a normal height of 12 to 18

TABLE 4
Distribution of Clearance and Relocation Cases, 1960-1980

Year	No. of Cases Rehoused in HDB Flats	No. of Cases Moved to Resettlement Areas	No. of Cases Who Found Own Accommodation	Total No. of Cases	Compensation Paid (S$ million)
1960	45	132	207	384	0.3
1961	77	57	160	294	0.3
1962	342	198	277	817	0.9
1963	589	307	285	1,181	1.7
1964	2,584	150	909	3,643	3.2
1965	4,570	182	1,758	6,510	5.5
1966	4,158	266	1,594	6,018	5.1
1967	4,002	90	1,892	5,984	4.1
1968	4,063	123	1,677	5,863	3.1
1969	3,924	416	2,179	6,519	4.8
1970	3,922	277	1,926	6,125	4.1
1971	2,263	145	1,474	3,882	5.5
1972	2,668	235	1,157	4,060	9.2
1973/74*	8,008	91	3,968	12,067	18.5
1974/75**	7,062	16	3,902	10,980	20.8
1975/76**	7,447	17	4,547	12,011	44.0
1976/77**	6,052	70	4,893	11,015	41.0
1977/78**	8,137	84	6,797	15,018	54.0
1978/79**	9,050	51	7,342	16,443	52.8
1979/80**	10,300	48	7,704	18,052	94.9
TOTAL	89,263	2,955	54,648	146,866	373.8

* From January 1973 to March 1974.
** From April of the year to March of the following year.

SOURCE: Derived from *HDB Annual Report 1974/75*, p. 146; *1979/80*, p. 60.

TABLE 5
Percentage Distribution of Households by Type of Housing Unit in Singapore

Type of Housing Unit	1966	1970	1977
Bungalows/semi-detached & terrace houses	7.2	14.1	11.2
Public flats	25.4	30.9	60.2
Private flats	3.9	4.8	3.2
Attap & zinc-roofed houses	30.9	33.6	18.4
Shophouses	31.1	12.6	
Others	1.6	4.0	7.0
TOTAL	100.0	100.0	100.0
No. of households	(331,900)	(380,500)	(425,800)

SOURCES: P. Arumainathan, *Report on the Census of Population 1970 Singapore Volume 1* (Singapore: Department of Statistics, 1973), p. 209; You Poh Seng et al., *Singapore Sample Household Survey 1966* (Singapore: Ministry of National Development, 1967), p. 165; and *Report on Survey of Households 1977* (Singapore: Department of Statistics, 1978), p. 61.

storeys, although some buildings are as high as 25 storeys. Initially, these high-rise flats were built to provide proper and sanitary homes for low-income families. Now, however, high-rise public housing flats are also fast becoming homes for middle-income families as well. The relocation process generated by large-scale public housing programs has, therefore, significantly changed the living patterns of the population, from low-rise living to high-rise living.

Another effect of the relocation schemes has been the decline in the population size of the Central Area, traditionally a densely populated area of the city. In 1957 there were about 360,000 people in the Central Area, or 25 percent of Singapore's total population. However, since 1957 the population in this area has witnessed a rapid decline. By 1977 the population in the Central Area had dropped to 200,000, with an average of 8,000 people moving out per year between 1957 and 1977.

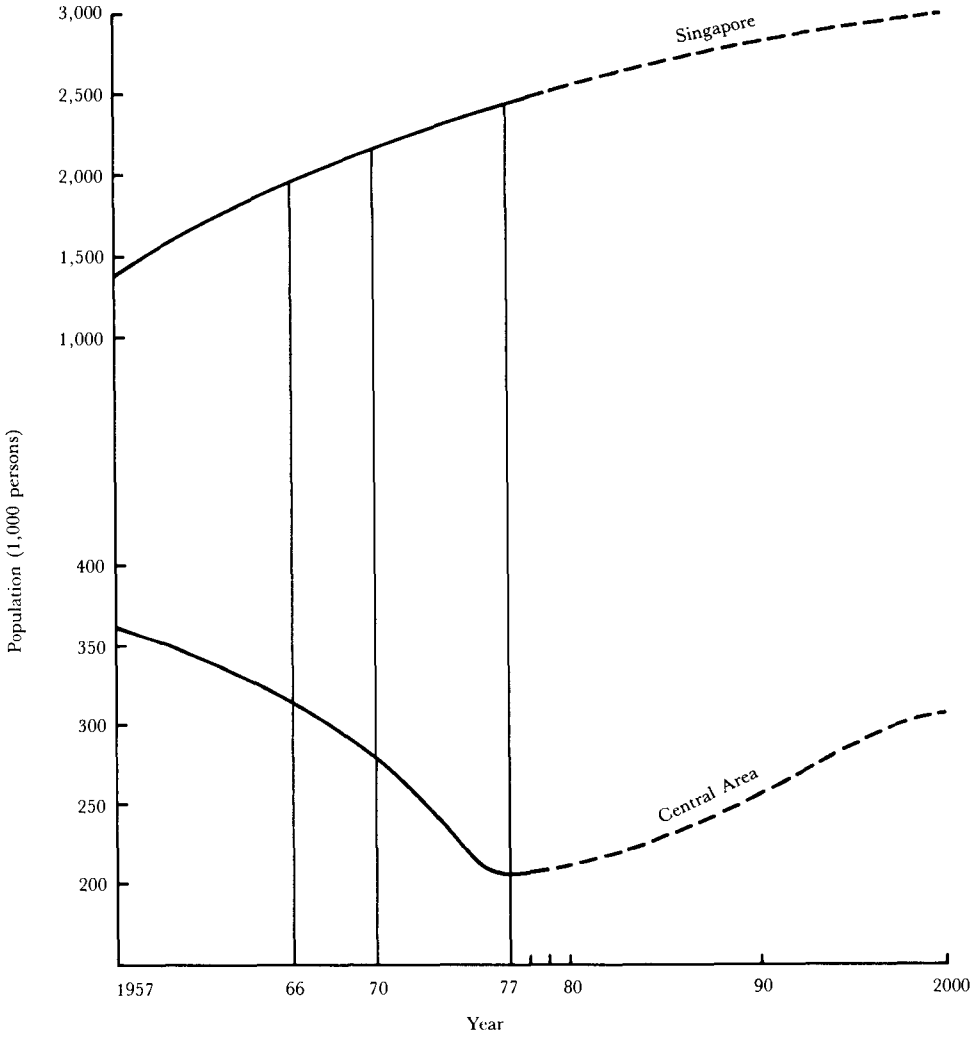
The population decline in the Central Area has been caused mainly by the policy of the Statutory Master Plan and the housing policy of the HDB in the sixties. The Statutory Master Plan provided guidelines for urban development for the period 1953–1972. One of the main objectives of this plan was to reduce the population living in the Central Area by one sixth in order to solve the problems of overcrowding and traffic congestion in the central business district. The housing policies of the HDB in the 1960s closely followed the guidelines of the Master Plan and concentrated its efforts on developing public housing in the new towns, some distance from the Central Area.

Since the early 1970s, the housing policies of the HDB have been guided by the new Comprehensive Plan, which covers a period of 20 years from 1973 to 1992 and replaces the Statutory Master Plan for urban development in Singapore. The guidelines provided in the Comprehensive Plan are aimed at increasing rather than reducing the population in the Central Area. The injection of residents into the Central Area has now become a major government policy in order to revitalize the Central Area. As pointed out by the Urban Redevelopment Authority (URA), through judicious planning and intermingling of residential, commercial, and recreational projects within the Central Area, it is hoped that the decline of population in the Central Area can be checked (URA 1979: 13). In achieving this aim, the HDB and the URA have had very important roles to play and have worked hand in hand in providing residential and commercial units in the Central Area. The HDB built 10,000 flats in the Central Area during the Fourth Five-Year Building Program (1976–1980) compared to 12,500 units built during the ten-year period from 1960 to 1975. As a result, the decline in population in the Central Area was checked so that since 1977 the population within the Central Area has witnessed an increase instead. More specifically the population increased from 200,000 in 1977 to 205,000 in 1979 (URA 1979: 13), and then to 228,400 in 1980 (Singapore, Department of Statistics 1981). The HDB continues to provide more public housing in the Central Area. It hopes to increase the population by 50 percent over the next ten decades, so that the population will be approximately 300,000 by the year 2000. The population trends in the Central Area and the whole country during the period 1957–2000 are outlined in Figure 1.

The third significant change in the distribution patterns of the population over the past two decades has been the increasing concentration of Singapore's population in public housing estates in the new satellite towns. In the early years, public housing estates built by the HDB were mostly around the city and within a five-mile radius of the Central Area. The first two satellite towns for public housing estates were Queenstown and Toa Payoh, where building programs commenced in 1957 and 1964 respectively. The distance from these new towns to the city center is between 2.7 and 4.3 miles. Since the mid-1970s, the sites of new towns have extended to the suburban and rural areas and, as pointed out by the HDB's Chief Executive Officer, "the locations and population sizes of these various satellite towns have to fall within the broad framework of the Concept Plan

of Singapore (which is recently referred to by all government authorities as the Comprehensive Plan)" (Yeh 1975: 126).

FIGURE 1
Population Trends in the Central Area and Singapore



SOURCE: *Nanyang Siang Pau,* 18 March, 1981.

The projected population size of these new towns are shown in Table 6. Altogether there will be 11 major new towns when the housing development programs are completed in 1992. Out of the eleven satellite towns, seven will have a distance of less than 14 kilometers from the city center and four will have a distance of more than 14 kilometers from the city center. The four new towns farther away from the city center are Jurong, Tampines, Yishun (Nee Soon), and Woodlands (see Table 6). There will be

TABLE 6
Projected Population and Distance from City Center of New Towns

New Town	Projected Total Population	Distance from City Center (km.)
Queenstown	150,000	5-8
Telok Blangah	70,000	5-7
Toa Payoh	190,000	6-8
Hougang (Hou Kang)	120,000	9-13
Bedok	237,500	10-14
Ang Mo Kio	245,000	10-14
Clementi	122,500	11-13
Tampines	225,000	14-18
Jurong	137,000	14-21
Yishun (Nee Soon)	200,000	19-21
Woodlands	290,000	22-25

SOURCE: *HDB Annual Report 1979/80*, p. 19.

public housing estates and industrial estates in these four satellite towns, e.g., Jurong Industrial Estate, the largest industrial estate in the Republic.

When all the housing development programs are completed in 1992, each satellite town will have a population of between 70,000 and 290,000. Each satellite town will have high-density public housing estates, industries, and a center incorporating the main commercial, community, and recreational facilities. Inter-town linkages will be based on efficient and fast transport facilities. An expressway system and a mass transit system will link all major satellite towns with the Central Area.

As a result of the development programs of public housing estates, the majority of Singapore's population, i.e., 70 percent at present and 80-85 percent by 1992, will be concentrated in high-rise public housing estates in the above-mentioned 11 satellite towns and the Central Area of the city.

THE IMPACT OF RELOCATION ON RELOCATED FAMILIES IN PUBLIC HOUSING ESTATES

Since 1960 the government has undertaken large-scale public housing programs to provide low-cost high-rise flats for Singapore's population. By March 1980, the HDB had completed a total of 334,444 public housing flats, providing accommodation for 1.6 million people (HDB 1980: 50) while the Jurong Town Corporation (JTC) had built another 23,289 public housing units for another 111,799 people (JTC 1980: 42). Although the majority of the families living in public housing estates are voluntary relocatees, many families were affected by the resettlement schemes and rehoused into the public housing estates. During the period 1960-1980, there were altogether 146,866 squatter cases affected by the resettlement schemes. Of these cases about 70 percent were families and farmers, while the other 30 percent were in categories such as shops and industries.

The Sample Survey

A sample survey on the impact of relocation on relocated families in Singapore was

conducted by the author in November 1980.[3] The survey used a structured questionnaire on a random sample selected from nine major public housing estates, namely, Ang Mo Kio, Bedok, Bukit Ho Swee, Clementi, Marine Parade, Queenstown, Telok Blangah, Toa Payoh, and Jurong. The first eight housing estates were developed by the HDB whereas the last estate was developed by the JTC. Among these nine housing estates, Bukit Ho Swee and Queenstown are the oldest housing estates, while Ang Mo Kio and Bedok are the newest ones. Ang Mo Kio, Bedok, and Toa Payoh are among the largest public housing estates in Singapore, each of which will have a total population of more than 200,000 when the development of the whole estate is completed.

In March 1979 when the sample was selected, there were altogether 176,260 units of public housing flats in the nine housing estates included in the survey. This figure represented 52.5 percent of the total number of units (335,852) of public housing flats that had been built by HDB and JTC at that time.

The sample was stratified by size of the housing estates and type of flats. The sample size for those housing estates with less than 15,000 flats was 100 households per estate. Estates which had between 15,000 and 30,000 flats were represented by a sample of 150 households each. Finally, for those estates with more than 30,000 flats, a sample size of 200 was selected. In all, a total of 1,200 households were selected for the survey.

The sample for each housing estate was selected according to two main criteria, namely, type of relocatees and type of flats. Relocatees were classified into two types, i.e., voluntary and involuntary. Public flats were classified into three major types, namely, one-room and two-room flats, three-room flats, and four-room and five-room flats. These categories corresponded to the approximate proportion of the distribution of the actual number of each type of flats in the nine housing estates.

Although the household was the sampling unit for this study, interviews were conducted with individuals representing the household. The respondent was any one of the following: the household head, his spouse, an adult member of the family who was nominated by the other members.

The survey results discussed in this section of the paper are confined only to some findings relating to the effects of relocation on residents of public housing estates.

Voluntary and Involuntary Relocatees

As shown in Table 7, the majority (72.1 percent) of the families in the sample were voluntary relocatees. Involuntary relocatees comprised 27.9 percent. Another 24.8 percent did not classify themselves as voluntary or involuntary relocatees. The majority (79 percent) of the respondents indicated that the flats they were occupying were in the housing estate of their own choice. Only 6.9 percent said that their flats were not in the housing estate of their choice but had been allocated to them by the proper authorities. The other 14.1 percent of the respondents indicated that their flats had been allocated to them because they themselves did not specify preference for a particular estate. Among the public housing residents 16.4 percent wanted to move to other public housing flats for various reasons. Only 1.5 percent wanted to move to non-HDB housing, while 10.5 percent were uncertain of their plans. The majority (71.6 percent) of the respondents were quite certain that they were satisfied with their present public housing flats and that they did not have any plans of moving out.

[3] The survey on relocation and high-rise living was funded by the Southeast Asia Population Research Awards Program of the Institute of Southeast Asian Studies. The results discussed in this paper are confined only to the findings related to the effects of relocation on relocated families. Detailed analyses of the findings resulted from this survey will be made in the author's doctoral dissertation on "Relocation and High-rise Living in Singapore" to be submitted soon to the University of Hull.

TABLE 7
Distribution of Relocatees by Type, by Choice of Estate, and by Intention to Move Out of HDB Flat

	Number	%
Type of Relocatees		
Voluntary	865	72.1
Involuntary	335	27.9
TOTAL	1,200	100.0
Choice of Estate		
Their own choice	948	79.0
Not their choice	83	6.9
Did not specify preference	169	14.1
TOTAL	1,200	100.0
Intention to Move Out of the HDB Flat in the Near Future		
No intention to move out	860	71.6
Would move to other HDB flats	196	16.4
Would move to non-HDB housing	18	1.5
Uncertain	126	10.5
TOTAL	1,200	100.0

Adverse Effects of the Relocation

Did relocation have any effects on the relocated families? The findings show that the majority of the public housing residents experienced some adverse effects on their financial situation and additional burdens were caused by increases in transport expenses and commuting time to work. As shown in Table 8, more than 70 percent of the respondents experienced increases in transport expenses. Only a little over seven percent said their transport expenses decreased. Jurong, Telok Blangah, and Bukit Ho Swee registered the lowest percentages in terms of respondents whose transport expenses increased since they moved to the present estates. This may be due to the fact that most Jurong residents work in the Jurong Industrial Estate, whereas Bukit Ho Swee and Telok Blangah are close to the Central Area. Moreover, there are light industries in Bukit Ho Swee as well. Similarly, the majority of the public housing residents experienced an increase in commuting time to work as a result of their moving to the present estates (see Tables 8 and 9).

In general the relocation imposed some financial difficulties upon the relocated families. As shown in Table 10, 21.6 percent of the respondents indicated that the relocation had many adverse effects on their financial situation while 43.3 percent said they experienced only a few of these effects. About 30 percent of the respondents, however, indicated that the relocation did not have any adverse effect on their financial situations. Residents of Jurong, Toa Payoh, Bukit Ho Swee, and Marine Parade were much better-off compared to those in the other estates since there were fewer residents in these four estates who experienced adverse effects on their financial situations (see Table 10).

Satisfaction with Public Housing Estates

In general, the respondents were satisfied with the living environment of the housing estate in which they lived. More than 93 percent said they were satisfied with their housing estate and only six percent said they were not satisfied. In terms of ethnic groups

TABLE 8
Percentage Distribution of Relocatees by Effects on Transport Expenses, by Ethnic Group, and by Location of Housing Estates (n = 1,200)

Relocatees' Ethnic Group and Location of Housing Estate	Effects on Transport Expenses				Total
	Increased	Decreased	No Change	No Answer	
Ethnic Group					
Chinese	70.5	6.0	17.2	6.3	100.0
Malay	71.1	8.9	18.0	2.0	100.0
Indian	64.0	14.6	16.5	4.9	100.0
Others	75.0	5.0	15.0	5.0	100.0
ALL ETHNIC GROUPS	70.1	7.3	17.3	5.3	100.0
Location of Housing Estate					
Ang Mo Kio	70.6	4.6	8.7	16.1	100.0
Bedok	70.6	8.0	17.3	4.1	100.0
Bukit Ho Swee	62.0	11.0	25.0	2.0	100.0
Clementi	77.0	6.0	12.0	5.0	100.0
Marine Parade	83.0	5.0	11.0	1.0	100.0
Queenstown	84.6	6.0	8.0	1.4	100.0
Telok Blangah	56.0	6.0	18.0	20.0	100.0
Toa Payoh	84.0	4.5	10.0	1.5	100.0
Jurong	37.3	15.4	46.7	0.6	100.0
ALL ESTATES	70.7	7.3	17.3	5.3	100.0

TABLE 9
Percentage Distribution of Relocatees by Effects on Commuting Time, by Ethnic Group, and by Location of Housing Estates (n = 1,200)

Relocatees' Ethnic Group and Location of Housing Estate	Effect on Commuting Time				Total
	Increased	Decreased	No Change	No Answer	
Ethnic Group					
Chinese	50.7	14.0	25.2	10.1	100.0
Malay	60.0	14.3	22.9	2.8	100.0
Indian	48.5	17.5	26.2	7.8	100.0
Others	70.0	5.0	20.0	5.0	100.0
ALL ETHNIC GROUPS	52.7	14.3	24.7	8.3	100.0
Location of Housing Estate					
Ang Mo Kio	44.7	20.0	14.7	20.6	100.0
Bedok	51.3	14.0	24.7	10.0	100.0
Bukit Ho Swee	50.0	13.0	30.0	7.0	100.0

TABLE 9 (Continued)

Relocatees' Ethnic Group and Location of Housing Estate	Effect on Commuting Time				
	Increased	Decreased	No Change	No Answer	Total
Clementi	57.0	22.0	14.0	7.0	100.0
Marine Parade	57.0	12.0	27.0	4.0	100.0
Queenstown	55.3	14.0	24.0	6.7	100.0
Telok Blangah	45.0	11.0	22.0	22.0	100.0
Toa Payoh	70.5	9.0	17.5	2.0	100.0
Jurong	36.6	14.0	48.7	0.7	100.0
ALL ESTATES	52.7	14.3	24.7	8.3	100.0

TABLE 10
Percentage Distribution of Relocatees by Extent of Adverse Effects on Financial Situation, by Ethnic Group, by Age, and by Location of Housing Estate ($n = 1,200$)

Relocatees' Background Characteristics	Extent of Adverse Effects on Financial Situation				
	A Lot	A Little	No Adverse Effect	No Answer	Total
Ethnic Group					
Chinese	21.9	44.8	27.3	6.0	100.0
Malay	21.6	38.4	37.6	2.4	100.0
Indian	18.4	40.8	38.8	2.0	100.0
Others	25.0	55.0	20.0	0.0	100.0
ALL ETHNIC GROUPS	21.6	43.3	30.3	4.8	100.0
Age Group					
Below 20	25.0	15.0	55.0	5.0	100.0
20-29	21.0	41.5	31.2	6.3	100.0
30-39	21.5	40.8	32.0	5.7	100.0
40-49	21.2	44.6	31.7	2.5	100.0
50 and above	22.3	48.0	24.7	5.0	100.0
ALL AGE GROUPS	21.6	43.3	30.3	4.8	100.0
Location of Housing Estate					
Ang Mo Kio	14.0	58.7	15.3	12.0	100.0
Bedok	38.0	32.7	25.3	4.0	100.0
Bukit Ho Swee	26.0	42.0	30.0	2.0	100.0
Clementi	23.0	47.0	26.0	4.0	100.0
Marine Parade	29.0	40.0	29.0	2.0	100.0
Queenstown	20.7	53.3	24.7	1.3	100.0
Telok Blangah	36.0	26.0	26.0	12.0	100.0
Toa Payoh	14.5	47.0	34.0	4.5	100.0
Jurong	4.7	35.3	58.0	2.0	100.0
ALL ESTATES	21.6	43.3	30.3	4.8	100.0

the Malays had the highest percentage of satisfied respondents. More specifically, 27.3 percent of the Malays were very much satisfied with their housing estate, 66.5 percent were quite satisfied with it, and only about five percent were not satisfied (see Table 11). The Malays also had the highest percentage of respondents who were satisfied with the living conditions in their HDB flats. Almost one fourth of the Malays were very much

TABLE 11
Percentage Distribution of Relocatees by Degree of Satisfaction With Housing Estate, by Ethnic Group, Age, Previous Residential Area, Type of Previous Housing, and Location of Housing Estate (n = 1,200)

Relocatees' Background Characteristics	Degree of Satisfaction With Housing Estate				
	Very Satisfied	Quite Satisfied	Not Satisfied	No Answer	Total
Ethnic Group					
Chinese	16.1	77.1	5.9	0.9	100.0
Malay	27.3	66.5	4.9	1.3	100.0
Indian	21.4	71.7	5.9	1.0	100.0
Others	30.0	55.0	15.0	0.0	100.0
Age Group					
Below 20	15.0	70.0	15.0	0.0	100.0
20-29	15.6	77.1	5.9	0.5	100.0
30-39	19.3	72.5	6.8	1.4	100.0
40-49	19.2	76.6	3.8	0.4	100.0
50 and above	20.7	72.0	5.7	1.6	100.0
Previous Residential Area					
City center	18.9	73.5	6.5	1.1	100.0
Suburban area	20.2	75.0	4.3	0.5	100.0
Rural	17.5	73.7	7.3	1.5	100.0
Type of Previous Housing					
High-rise	20.7	73.2	5.7	0.4	100.0
Low-rise	17.8	74.9	5.9	1.3	100.0
Location of Housing Estate					
Ang Mo Kio	25.3	68.7	6.0	0.0	100.0
Bedok	14.7	76.7	8.6	0.0	100.0
Bukit Ho Swee	15.0	72.0	12.0	1.0	100.0
Clementi	22.0	72.0	5.0	1.0	100.0
Marine Parade	34.0	62.0	3.0	1.0	100.0
Queenstown	23.3	72.0	3.3	1.4	100.0
Telok Blangah	12.0	81.0	6.0	1.0	100.0
Toa Payoh	16.0	77.0	5.5	1.5	100.0
Jurong	12.7	82.0	4.0	1.3	100.0
ALL CHARACTERISTICS	19.1	74.2	5.8	0.9	100.0

satisfied, 69.4 percent were quite satisfied and, only about six percent were not satisfied with the living conditions in their HDB flats (see Table 12).

The above findings on the Malay respondents are quite interesting to note as they seem to contradict the general impression that among the various ethnic groups, the Malays faced more difficulties and took a longer time to adapt to the new environment of the high-rise public housing estates.

TABLE 12
Percentage Distribution of Relocatees by Degree of Satisfaction With the Living Conditions of HDB Flat, and by Ethnic Group, Age, Previous Residential Area, Type of Previous Housing, and Location of Housing Estate (= 1,200)

Relocatees' Background Characteristics	Degree of Satisfaction			Total
	Very Satisfied	Quite Satisfied	Not Satisfied	
Ethnic Group				
Chinese	16.6	74.8	8.6	100.0
Malay	24.5	69.4	6.1	100.0
Indian	20.4	68.9	10.7	100.0
Others	20.0	65.0	15.0	100.0
Age Group				
Below 20	10.0	75.0	15.0	100.0
20-29	16.6	74.1	9.3	100.0
30-39	19.0	73.3	7.7	100.0
40-49	20.5	72.4	7.1	100.0
50 and above	18.0	72.3	9.7	100.0
Previous Residential Area				
City center	16.3	72.8	10.9	100.0
Suburban area	20.0	74.2	5.8	100.0
Rural	19.3	71.5	9.2	100.0
Type of Previous Housing				
High-rise	21.8	71.5	6.7	100.0
Low-rise	16.0	74.1	9.9	100.0
Location of Housing Estate				
Ang Mo Kio	23.3	71.3	5.4	100.0
Bedok	18.0	75.3	6.7	100.0
Bukit Ho Swee	11.0	66.0	23.0	100.0
Clementi	30.0	67.0	3.0	100.0
Marine Parade	33.0	57.0	10.0	100.0
Queenstown	17.3	76.0	6.7	100.0
Telok Blangah	11.0	77.0	11.1	100.0
Toa Payoh	13.5	79.0	7.6	100.0
Jurong	15.3	78.0	6.7	100.0
ALL CHARACTERISTICS	18.6	73.0	8.4	100.0

The Eurasians and other minority groups classified as "others" in the population census as well as in the survey are the groups which had the highest percentage of respondents not satisfied with the living environment of their public housing estates and the living conditions in their HDB flats. Fifteen percent of this group said that they were not satisfied with the public housing estates and their HDB flats (see Tables 11 and 12 respectively).

In terms of age, the younger population expressed more dissatisfaction with the living environment of their public housing estates and the living conditions in their public housing flats. Tables 11 and 12 show that the opinions of the younger group (below 30 years) towards public housing are different from those of the older group (above 30 years). The former group has higher percentages expressing dissatisfaction, whereas the latter group has higher percentages expressing satisfaction with both the living environment of the public housing estates and the living conditions of their HDB flats.

Former residential areas and types of previous housing units were factors that influenced the opinions of the residents towards public housing estates. Compared to the former urban dwellers the residents who formerly lived in rural areas were more satisfied with the living conditions in their HDB flats, but less satisfied with the living environment of their public housing estates (see Tables 11 and 12). This may be due to the fact that the former rural dwellers now enjoyed better kitchens, sanitation, water, and electricity as well as more space and better designed homes, but they still missed the close community ties and friendly neighborhood relationships they used to enjoy in their former rural communities. This finding confirms the conclusion of a 1976 survey (Chen and Tai 1977), which stated that although rural people face problems of inadequate drainage, sanitary and public utility facilities, they enjoy close community ties, good neighborhood relationships, close attachment to the community, and primary group contacts (Chen and Tai 1977: 74–102).

On the other hand, those who lived in high-rise flats before they moved to the HDB flats were more appreciative of both the living environment of the public housing estates and the living conditions of their HDB flats (see Tables 11 and 12). This difference in perception of their present residences may have been because it usually takes much more effort and a longer time for former rural area dwellers to adapt to the public housing estate environment. For those who had previously resided in high-rise flats, it was only a change from one high-rise living environment to another. Moreover, for the latter group, the change was usually an improvement over their previous living conditions.

The extent of satisfaction among the respondents varied from one housing estate to another. As shown in Tables 11 and 12, Marine Parade, Clementi, Queenstown, and Ang Mo Kio registered high percentages of residents who were satisfied with the living environment of the public housing estates and the living conditions of their HDB flats. Among these four public housing estates, Marine Parade, Clementi, and Ang Mo Kio are relatively new, having been constructed only in 1970s, whereas Queenstown is one of the oldest public housing estates, having been constructed in the early 1960s. Marine Parade, one of the best designed public housing estates, is considered as a housing estate for middle and upper-middle classes. The majority of housing units in Marine Parade are three-room, four-room, and five-room flats. There are no one-room flats in this estate. Clementi and Ang Mo Kio are, however, mixed housing estates with all types of flats, from one-room to five-room flats. The majority of housing units in these two housing estates are three-room flats. In Queenstown, the majority of housing units are two-room and three-room flats with some one-room and four-room flats. There are no five-room flats in this housing estate. However, Queenstown is quite close to the Central Area, only five to eight kilometers away. It is also convenient for travel to the Jurong Industrial Estate.

One of the least favored public housing estates was Bukit Ho Swee. More than 20

percent of the respondents from this housing estate indicated that they were not satisfied with the living conditions of their HDB flats while 12 percent of the residents were not satisfied with the living environment of the housing estate (see Tables 11 and 12). Bukit Ho Swee is one of the oldest public housing estates, with a great concentration of lower-class families. There are only one-room, two-room, and three-room flats in this estate. The majority are one-room flats. Moreover, compared to many other public housing estates, the community and recreational facilities in this housing estate are relatively inadequate.

Neighborhood and Neighborly Interaction

Although the majority of the respondents knew at least some of their neighbors in the housing estates, 22.2 percent said that they knew only very few of these neighbors and less than two percent did not know any of their neighbors in their estates (see Table 13). Among the various ethnic groups, the Malays scored the highest percentage of those who knew most of their neighbors (44.5 percent) and some of their neighbors (46.9 percent). Only about nine percent of the Malays said they knew very few of the neighbors or no one at all in their housing estates. In contrast to this, 28.2 percent of the Chinese knew either very few of their neighbors or no one at all in their estate. A little over 23 percent of the Indians and 25 percent of the other minorities classified as "others" were also in this category, i.e., knew very few of their neighbors or no one at all (see Table 13).

Among the different age groups, the younger respondents were more isolated in the housing estates. For example, 40 percent of the people below 20 years said that they knew very few or none of their neighbors compared to only 16 percent of those in the 40–49 age group who reported the same situation (see Table 13). However, compared to the older respondents, the youths had more contacts with their neighbors. Fifty percent of those below 20 years said that they maintained frequent contacts with their neighbors and only 15 percent said that they had no contacts with their neighbors at all. Although more than

TABLE 13
Percentage Distribution of Relocatees by Extent of Familiarity With Neighbors, by Ethnic Group, and by Age (n= 1,200)

Relocatees' Ethnic Group and Age	Extent of Familiarity With Neighbors				
	Know Most of Them	Know Some of Them	Know Very Few	Know No One at All	Total
Ethnic Group					
Chinese	26.1	45.7	26.5	1.7	100.0
Malay	44.5	46.9	7.8	0.8	100.0
Indian	35.9	40.8	22.3	1.0	100.0
Others	50.0	25.0	20.0	5.0	100.0
Age Group					
Below 20	0.0	60.0	35.0	5.0	100.0
20-29	24.9	45.4	26.3	3.4	100.0
30-39	28.4	44.9	24.2	2.5	100.0
40-49	37.8	46.2	15.4	0.6	100.0
50 and above	33.7	43.3	23.0	0.0	100.0
BOTH GROUPS	31.1	45.2	22.2	1.5	100.0

30 percent of the older respondents (50 years old and above) said that they knew most of their neighbors, less than 35 percent of them had frequent contacts with these neighbors and 21 percent had no such contact at all (see Tables 13 and 14).

Among the nine major public housing estates, it was the respondents from Clementi, Telok Blangah, Bedok, and Marine Parade who exhibited a lower degree of neighborliness. More than 27 percent of the respondents from these four housing estates indicated that they had no contact with their neighbors (see Table 14). It should be noted that Clementi, Telok Blangah, and Bedok are new housing estates with residents from different social classes. In addition these three estates have all types of housing units. On the other hand, Marine Parade is a middle-class public housing estate with larger-size flats. As the length of residence in the community is an important factor affecting the degree of neighborliness, it is not difficult to understand why there was a lower degree of neighborliness in Clementi, Telok Blangah, and Bedok. However, Marine Parade is not a new estate. Moreover, it is one of the best housing estates with excellent community and recreational facilities. The low degree of neighborliness exhibited by respondents from this housing estate may be attributed to middle-class Singaporeans' desire for

TABLE 14
Percentage Distribution of Relocatees by Extent of Contact with Neighbors, by Ethnic Group, Age, and Location of Housing Estate (n = 1,200)

Relocatees' Ethnic Group, Age, and Location of Housing Estate	Extent of Contact with Neighbors			
	No Contact	Incidental Talks Only	Frequent Contacts	Total
Ethnic Group				
Chinese	24.5	43.9	31.6	100.0
Malay	13.5	40.8	45.7	100.0
Indian	22.3	26.9	40.8	100.0
Others	15.0	50.0	35.0	100.0
Age Group				
Below 20	15.0	35.0	50.0	100.0
20-29	24.9	44.4	30.7	100.0
30-39	24.8	41.0	34.2	100.0
40-49	18.3	42.6	39.1	100.0
50 and above	21.0	44.3	34.7	100.0
Location of Housing Estate				
Ang Mo Kio	19.3	50.7	30.0	100.0
Bedok	28.7	45.3	26.0	100.0
Bukit Ho Swee	13.0	37.0	50.0	100.0
Clementi	36.0	35.0	29.0	100.0
Marine Parade	27.0	43.0	30.0	100.0
Queenstown	24.7	42.7	32.6	100.0
Telok Blangah	31.0	34.0	35.0	100.0
Toa Payoh	20.0	50.0	30.0	100.0
Jurong	5.3	37.3	57.3	100.0
ALL GROUPS	22.0	42.8	35.2	100.0

maximum privacy around their living environment and their generally more individualistic and self-centered lifestyles.

Respondents from Jurong and Bukit Ho Swee showed a high degree of neighborliness. Fifty percent of the respondents from Bukit Ho Swee and 57.3 percent of those from Jurong said they maintained frequent contacts with their neighbors. Only a little more than five percent of those from Jurong and 13 percent of those from Bukit Ho Swee had no contacts with their neighbors. It should be noted that compared to other public housing estates, residents in these two estates are not homogeneous in terms of social class and occupational status. In general, residents in the Jurong housing estate are working-class people, and most of them work in the Jurong Industrial Estate. By contrast, residents in Bukit Ho Swee are mostly lower-class people who have lived in this estate for a long time, Bukit Ho Swee being an old housing estate.

Neighbors in the public housing estates generally get along with each other quite well. Eighty-three percent of the respondents said that neighbors in their housing estates got along with each other very well or fairly well. Only about two percent said the contrary. About nine percent said that the neighbors were indifferent to each other (see Table 15). Among the various ethnic groups, the Malays apparently lived in the friendliest neighborhoods. Twenty-one percent of the Malay respondents said that their neighbors got along with each other very well. In contrast only about ten percent of the Chinese and

TABLE 15
Percentage Distribution of Relocatees by Neighbors' Relationship With Each Other, by Ethnic Group, and by Location of Housing Estate (n = 1,200)

Relocatees' Ethnic Goup and Location of Housing Estate	Neighbors' Relationship With Each Other					
	Get Along Very Well	Get Along Fairly Well	Do Not Get Along	Indifferent	No Answer	Total
Ethnic Group						
Chinese	9.6	70.8	1.9	9.6	8.1	100.0
Malay	20.8	69.8	0.8	6.2	2.4	100.0
Indian	9.7	79.6	1.0	4.9	4.8	100.0
Others	15.0	55.0	0.0	20.0	10.0	100.0
ALL ETHNIC GROUPS	12.0	71.1	1.6	8.7	6.6	100.0
Location of Housing Estate						
Ang Mo Kio	16.7	72.0	1.3	6.0	4.0	100.0
Bedok	12.7	71.3	1.3	10.0	4.7	100.0
Bukit Ho Swee	7.0	80.0	2.0	9.0	2.0	100.0
Clementi	7.0	60.0	2.0	8.0	23.0	100.0
Marine Parade	12.0	70.0	0.0	8.0	10.0	100.0
Queenstown	8.7	74.7	1.3	11.3	4.0	100.0
Telok Blangah	8.0	70.0	2.0	7.0	13.0	100.0
Toa Payoh	4.5	79.0	2.0	10.0	4.5	100.0
Jurong	29.3	58.0	2.7	7.3	2.7	100.0
ALL ESTATES	12.0	71.0	1.7	8.7	6.7	100.0

the same percentage of Indians had a similar situation. Among the nine major housing estates, Jurong and Ang Mo Kio had more respondents who stated that neighbors in their housing estates got along with each other very well (see Table 15).

One of the main objectives of the public housing program is to promote social and ethnic integration. The majority (50 percent) of the respondents indicated that there were more people from different ethnic groups in their present neighborhoods than there were in their former ones. Almost one third (30.1 percent) said that the racial mix in their present neighborhoods was about the same as in their previous neighborhoods, while 14.5 percent said that there was less. More Malays than any other ethnic group said that their present neighborhoods were more racially mixed than their previous ones (see Table 16).

TABLE 16
Percentage Distribution of Relocatees by Extent of Racial Mix in the Present Neighborhood, by Ethnic Group, and by Location of Housing Estate (n = 1,200)

Relocatees' Ethnic Group and Location of Housing Estate	Extent of Racial Mix in Present Neighborhood				
	More	About the Same	Less	No Answer	Total
Ethnic Group					
Chinese	50.3	30.8	16.1	2.8	100.0
Malay	61.3	29.0	9.4	0.3	100.0
Indian	56.3	25.2	14.5	4.0	100.0
Others	50.0	40.0	5.0	5.0	100.0
Location of Housing Estate					
Ang Mo Kio	44.7	34.7	19.3	1.3	100.0
Bedok	57.4	20.6	20.0	2.0	100.0
Bukit Ho Swee	39.0	32.0	21.0	8.0	100.0
Clementi	47.0	34.0	13.0	6.0	100.0
Marine Parade	71.0	22.0	7.0	0.0	100.0
Queenstown	44.7	40.0	15.3	0.0	100.0
Telok Blangah	57.0	25.0	13.0	5.0	100.0
Toa Payoh	48.5	37.0	13.5	1.0	100.0
Jurong	70.0	20.7	7.3	2.0	100.0
BOTH GROUPS	53.0	30.1	14.5	2.4	100.0

It is quite interesting to note that although all the survey respondents were flat dwellers, the majority (46.4 percent) preferred to live in low-rise housing if given the choice. About 38 percent preferred high-rise housing, and the rest (15.9 percent) had no preference. In general, the older respondents preferred low-rise housing, whereas the younger respondents preferred the high-rise one (see Table 17).

CONCLUSION

Population and housing are two important and interrelated variables in urban and national development. An unchecked population growth in land-scarce countries like

TABLE 17
Percentage Distribution of Relocatees by Housing Perference, by Ethnic Group, and by Age (n = 1,200)

Relocatees' Ethnic Group and Age	Housing Preference			Total
	High-rise Flat	Low-rise Housing	Indifferent	
Ethnic Group				
Chinese	36.2	48.9	14.9	100.0
Malay	44.1	35.5	20.5	100.0
Indian	36.9	48.5	14.6	100.0
Others	20.0	70.0	10.0	100.0
Age Group				
Below 20	45.0	20.0	35.0	100.0
20-29	39.5	46.8	13.7	100.0
30-39	40.5	46.6	12.9	100.0
40-49	35.3	47.1	17.6	100.0
50 and above	35.0	47.0	18.0	100.0
BOTH GROUPS	37.7	46.4	15.9	100.0

Singapore will result in a number of social problems. In the case of Singapore, overcrowding and housing shortage in the 1950s and early 1960s became a pressing social and political issue. The ever-increasing population growth rates during that period exacerbated the housing situation. When the PAP government gained power in 1959, it made housing a top priority for national development. Moreover, this government realized that housing was not an isolated issue and could not be solved by tackling the problem independently. An integrated approach had to be adopted if optimum results were to be achieved. Thus, apart from launching large-scale public housing programs the government simultaneously introduced comprehensive population and family planning programs to regulate the population growth rates. The HDB was established to undertake public housing development schemes, whereas the Population and Family Planning Board was instituted to implement population and family planning programs.

Today Singapore has successfully achieved its original objectives in solving the population and housing problems faced in the 1950s. The population growth rates have been reduced from over five percent in the 1950s to 1.2 percent in recent years. Moreover, the government has now provided public housing flats for nearly 70 percent of its population.

Although Singapore's solution to its population and housing problems is unique, this solution can serve as a model for some developing countries if it is applied selectively and adjusted to different social and political settings.

THE ROLE OF MIGRATION IN THE INDUSTRIAL MANPOWER POTENTIAL OF HAAD-YAI, THAILAND

Valaiporn Kangsanant

An influx of migrants to the capital cities of developing countries has always been a phenomenon in the Third World. In Thailand during the 1960–1970 period, the average annual rate of population growth for the whole country was about three percent while for metropolitan Bangkok it was approximately five percent (National Statistics Office 1970). Migration obviously accounted for a major part of the growth of the metropolis. The high rate of net migration to the metropolis has become a cause of great concern as more people crowd into the city, compete for its limited facilities, and create severe problems, such as unemployment, housing shortage, increase of slum areas, etc.

To rectify the situation, a national policy to counterbalance the flow to Bangkok and to decentralize the urban population of Thailand has been formulated. An important way of implementing this policy is to foster industrial expansion and opportunities elsewhere based on the "growth pole" concept. In other words, development should be concentrated on a limited number of centers where suitable conditions can be established. Various provinces in the northern, northeastern, and southern sections of Thailand have been selected for development as industrial centers.

In the south, Haad-Yai is one of the few centers which have been recommended for development as industrial estates. This being so, a study of the migrant work force in Haad-Yai is desirable to help determine what factors will make Haad-Yai an attractive place of employment.

STATEMENT OF THE PROBLEM

One of the required conditions for an industrial estate is the availability of a labor force, and hence, a large urban population. Urbanization in the south is still in its infancy, with only about ten percent of the southern population living in the 25 municipal areas of the region (Hunting Technical Services, Ltd. 1974).* Urban growth in the south has been very slow. Census figures show that the south's urban population increased by only 0.6 percent, from 10.1 percent in 1960 to 10.7 percent in 1970. Furthermore, urban areas in the south are relatively small. As of 1970 only one area had a population larger than 45,000, and almost one half of the total urban population was in areas with a population density of 5,000–15,000 (National Statistics Office 1970). About three fourths of the population lives in the eastern parts of the southern region; the overall migration trend is east-to-west and mainly rural-to-rural (Hunting Technical Services, Ltd. 1974).

It would, therefore, appear that a detailed study of Haad-Yai in particular is needed in order to reconcile the apparent inconsistency between the overall rural-to-rural migration trend in the south and the attempt to develop Haad-Yai into an industrial estate. This research project is an attempt to study the role of rural-to-urban migration in Haad-Yai

*In this study, a municipal area is regarded as an urban area for lack of an official definition of the term "urban."

with a view to assessing the impact of migration on the industrial manpower potential of Haad-Yai as an aid to policy formulation.

There is no doubt that the expansion of the manufacturing sector will be beneficial to the industrial development of Haad-Yai, as well as southern Thailand in general. The study, thus, focused on this particular sector of industry. We are, however, under no illusion that manufacturing development is industrial development. Without supporting sectors such as commerce and services, industrial development cannot be achieved with manufacturing expansion alone. It is for this reason that other sectors, namely, commerce and services, were also included in the study although to a more limited extent than the manufacturing sector.

METHODOLOGY

This study investigated the role of rural-to-urban migration in the industrial manpower potential of Haad-Yai by examining the employment distribution of migrants living in Haad-Yai by industry type, by identifying the origins of migrants, and by determining the extent to which migrants move to Haad-Yai to find employment in industries there.

Definition of Terms

Industrial manpower refers mainly to manpower in the manufacturing sector, as distinct from the commerce and services sectors. The reason for this distinction lies in the potential contribution which the expansion of the manufacturing industry can make to the economy of southern Thailand in general and Haad-Yai in particular. The role of the manufacturing sector in industrial development may be summarized as follows:

1. *Processing primary products for export.* In virtually all cases, primary products require some processing before they are exported to other regions or countries, for example, rubber has to be made into sheets or blocks, tin ore must be smelted, timber needs to be sawn and shaped, and coconuts may be processed into coir. These processes add considerable value to the natural products.
2. *Fulfilling local needs.* The regional and sub-regional markets may not be large enough to support manufacturing industries on a large scale, but these markets will support some industries which meet local needs, for example, food manufacturing, rice production, boat and vehicle repair, and the manufacture of metal products.
3. *Substituting for imports.* Agricultural economies like Songkla have a high propensity for importing manufactured goods. By developing some local manufacturing capacity the balance can be partially redressed and an unnecessary outflow of funds avoided.
4. *Raising incomes.* Although small-scale industries tend to be labor-intensive in comparison with larger-scale operations, they are still highly productive in value-added terms when compared to the primary sectors. Raising the proportion of manufacturing industry employment *vis-à-vis* the primary sectors will have a beneficial effect on incomes.
5. *Stabilizing the economy.* The incomes of primary producers depend on price movements which they can do little to control. Therefore, the buoyancy of the local economy can be highly unpredictable. A developed processing and manufacturing sector can help absorb these fluctuations, producing a more varied and stable economic structure.

For statistical purposes, the definition of *manufacturing sector* in this study is identical with that used by most official agencies. The manufacturing sector includes establishments which produce the following: food, beverages, wood and cork, printing and publishing, rubber and rubber products, non-metallic mineral products, metal products, non-electrical machinery, and other miscellaneous products.

For statistical purposes, the definition of a *factory* is that which was adopted by the Ministry of Industry:

> A factory is a building, place or vehicle, using machines, the output of which is more than 2HP or its equivalent thereto, or employing seven or more workers whether or not using machines, for making, producing, assembling, canning, repairing, maintaining, testing, modifying, transforming, or destroying any matter.

A *migrant* is defined as a person who has resided in Haad-Yai for a period of less than five years.

Data and Variables of the Study

Two types of data — primary and secondary — were used in this study. The primary data were obtained by interviewing a sample of workers. A total of 1,100 workers, inclusive of a margin of error of 100, comprised this sample. The bulk (820) of the respondents came from the manufacturing sector, 130 from the commerce sector, and 150 from the services sector. The sample from the manufacturing sector was taken at random from a total of 131 factories located in Haad-Yai. These factories were pre-stratified using as weight the size of employment in each kind of factory. The commerce sector sample was randomly selected from a prepared list of banks, insurance companies, and other financial and commercial establishments in Haad-Yai. Finally, the sample from the services sector was taken at random from a prepared list of service-trade establishments in Haad-Yai.

A structured interview approach was adopted since it was felt that many respondents would not be fully conversant with the written formal Thai. This approach was especially effective when the interviewers spoke the southern dialect.

A number of suitable local interviewers were employed, trained, and assigned quotas of respondents and factories. The quotas assigned were in accordance with the size-of-employment weight for each kind of factory.

The secondary data came basically from two sources, namely, Suwanlee Piampiti's 1976 study entitled "Effects of Migration on Urban Development in the Southern Region of Thailand," and various government statistical publications.

The study investigated several variables, including economic and migration variables. However, the main variable in the analysis was employment. More specifically, the main analysis focused on the contribution of migrant labor — classified according to demographic variables — to the Haad-Yai labor force — classified according to industry type. Details of the migrant work force were also analyzed.

GENERAL CHARACTERISTICS OF THE MANUFACTURING SECTOR AND ITS WORK FORCE

In the manufacturing sector the largest percentage (31 percent) of workers were found in the rubber and rubber products industry. The second largest group (18.9 percent) of workers was in the non-electrical machinery industry. Workers from the food manufacturing, wood and cork manufacturing, and metal products industries were the third largest group (approximately nine percent each). The remaining workers were equally divided among the rest of the manufacturing industries.

A major percentage (44.1 percent) of the factories comprised limited-liability companies, a number (35.6 percent) were privately owned, and the rest were partnerships. The majority of the factories were of a relatively small size, employing less than 50 workers. The exception was the rubber and rubber products industry, where the size of employment ranged from 100 to 400 workers. The majority of firms in the commerce and services sectors had less than 50 workers.

Male workers represented a very high percentage (72.2 percent) of the total work

force. Of this group 26 percent were in the age group of 20 to 24. The second largest age groups were the 15 to 19 and the 25 to 29 ranges. Only approximately six percent of the male work force were 45 years and above. As it is a well-established fact that migrants are usually represented by the young, this finding should have an interesting implication. The non-electrical machinery industry was found to have the highest concentration of male workers in the age group of 15 to 24 whereas the printing and publishing industry had the highest concentration of male workers who were below 15 years old. However, the rubber and rubber products industry, the largest in terms of employment size, had the highest concentration of male workers in the oldest category, 45 years and above.

Female workers represented 27.8 percent of the total work force. The age pattern of the female work force was similar to that of its male counterpart, i.e., the majority of the female workers were in the age group of 20 to 24 while very few were 45 years or older. The rubber and rubber products industry had the highest concentration of female workers in the age group of 45 to 54.

With the exception of the rubber and rubber products industry, the female work force in the survey was concentrated in the services sector and, to a lesser extent, in the commerce sector. This is in contrast with the male work force, of which approximately 75 percent were found in the manufacturing sector.

The majority (51.7 percent) of the work force in the survey were single whereas 46.1 percent were married. Of those who were married, 41.3 percent had one to two children, 29.4 percent had three to four children, and 23.7 percent had more than four children. The rest (5.6 percent) had no children. The majority (65.7 percent) of the manufacturing and services work force had at least some formal schooling. Of these, 51 percent reported having completed only the Pratom 4-level of elementary school. However, no one in the manufacturing sector had completed education beyond the secondary level. This contrasts with the commerce sector, where 41.3 percent had a college education. Of the total work force in the survey, 48.4 percent were non-migrants and 51.6 percent were migrants. Table 1 shows the percentage distribution of migrants by sector/industry.

TABLE 1
Percentage Distribution of Migrant Workers by Sector/Industry

Sector/Industry	% of Migrant Workers
Manufacturing Sector	
Food	64.5
Beverage	58.3
Wood & cork	54.5
Printing & publishing	29.4
Rubber & rubber products	42.4
Non-metallic mineral products	57.1
Metal products	41.5
Non-electrical machinery	47.3
Commerce Sector	50.0
Services Sector	69.1
Others	31.6
TOTAL	100.0
ALL SECTORS	51.6

CHARACTERISTICS OF MIGRANT WORKERS

Origin of Migrant Workers

The majority (approximately 53 percent) of migrant workers were originally from other districts in the province of Songkla. Among the districts which contributed a large share of migrant workers were Sadoa, Jana, and Ra-noad. Of those originally from other provinces, Nakhonsrithammarat, Yala, Trang, and Pattalung were found to be the main origins. It is interesting to note that quite a large number of female workers in the services sector were originally from the northern as well as the central regions.

Reasons for Migration

Table 2 shows the migrant workers' reasons for migration by sector/industry. The most important and the only outstanding reason for migration appears to be the search for employment. However, there are certain exceptions to this pattern. Migrant workers in the non-electrical machinery industry moved to Haad-Yai to get training while a large percentage of those in the rubber and rubber products industry migrated to join their spouses. A point of interest is the fact that migrant workers in the commerce and services sectors appear to have been motivated not so much by their search for employment as by a desire to obtain better-paid employment.

Patterns of Migration

Table 3 shows the migrant workers' patterns of migration by sector/industry. The largest percentage (58.6 percent) of migrant workers went to Haad-Yai on their own. However, migration of the whole family also accounts for quite a significant percentage (36.5 percent). It is worth noting that the services sector accounts for quite a substantial percentage of migrant workers moving without their families in spite of the relatively small sample size in that sector.

Type of Residence After Migration

Table 4 shows the type of residence migrant workers had after migration by sector/industry. It is noted that the largest percentage (36.5 percent) belongs to the category of "Employer's Place." Another important category of residence after migration is "Rented Place" (32.2 percent). Only 12 percent of the total migrant workers reported having their own residences. An interesting point is that the services sector accounts for as much as 26.4 percent of those having their own residences and 31.2 percent of those renting a place in spite of the relatively small sample size in that sector. Migrant workers in the non-electrical machinery industry account for the largest percentage of those sharing a place, while those in the rubber and rubber products industry account for the largest percentage of those residing with relatives.

Patterns of Shifts in Employment

Table 5 shows how often the migrant workers have changed their employment. It appears from the data in Table 5 that migrant workers in the services sector have been relatively prone to employment changes whereas those in the rubber and rubber products industry have been relatively stable in this respect.

The data gathered by this study also indicated the patterns of shifts in the migrant workers' employment. Table 6 presents this information. It appears that the migrant workers in the services sector, the wood and cork industry, the rubber and rubber products industry, and the non-metallic mineral products industry have been highly stable in terms of employment changes. Other migrant workers have also been relatively stable with the exception of those in the commerce sector and the food manufacturing

TABLE 2
Percentage Distribution of Migrant Workers by Reasons for Migration and by Sector/Industry

Sector/Industry	Reasons for Migration					
	To Seek Employment	To Further Education	To Train	To Join Spouse	To Find Better-Paid Employment	Others
Manufacturing Sector						
Food	10.3	5.9	11.5	12.5	0.0	7.2
Beverage	9.2	5.9	0.0	0.0	0.0	4.3
Wood & cork	9.2	5.9	0.0	6.3	2.4	2.9
Printing & publishing	2.4	0.0	3.8	6.3	0.0	1.4
Rubber & rubber products	23.6	5.9	0.0	31.3	16.3	14.5
Non-metallic mineral products	4.8	0.0	0.0	0.0	0.0	0.0
Metal products	5.5	0.0	7.7	6.3	7.1	1.4
Non-electrical machinery	13.3	5.9	65.4	6.3	9.5	8.7
Commerce Sector	4.1	23.5	0.0	6.3	31.0	11.6
Services Sector	16.0	41.2	11.5	12.5	28.6	42.0
Others	11.7	5.9	0.0	12.5	4.8	5.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
ALL SECTORS	75.7	2.4	3.6	2.2	5.9	9.6

TABLE 3
Percentage Distribution of Migrant Workers by Patterns of Migration and by Sector/Industry

Sector/Industry	Patterns of Migration		
	Whole Family Migrated	Part of Family Migrated	Only Respondent Migrated
Manufacturing Sector			
Food	7.7	25.7	9.1
Beverage	9.6	2.5	6.7
Wood & cork	10.0	2.9	6.7
Printing & publishing	1.5	5.7	2.4
Rubber & rubber products	23.0	22.9	20.5
Non-metallic mineral products	8.0	0.0	1.2
Metal products	3.4	8.6	5.7
Non-electrical machinery	11.1	11.4	15.8
Commerce Sector	8.0	5.7	6.4
Services Sector	13.8	14.3	23.6
Others	3.8	0.0	1.9
TOTAL	100.0	100.0	100.0
ALL SECTORS	36.5	4.9	58.6

industry. Table 6 also indicates that the rubber and rubber products industry, the non-electrical machinery industry, and the services sector have absorbed a significant proportion of the farming labor.

A rather steady situation in terms of the positions held by migrant workers before and after shifts is also observed. For example, 81.7 percent of the migrant workers started as workers before the first shift and have remained workers after the last shift. The picture is very much the same for all positions.

Earnings

Table 7 shows the percentage distribution of migrant workers in terms of their earnings. It appears that those in the manufacturing sector in general were in relatively low-income brackets whereas those in the commerce and services sectors were in high-income brackets. Among the manufacturing industries, those in the non-electrical machinery industry appear to have earned more than those in other industries. Taken as a whole, the majority of the migrant work force earned a low income, i.e., below 1,000 baht per month.

Of those who answered the questions on income, 41.5 percent said their present earnings were higher than before. It is rather surprising that those in the commerce and services sectors did not appear to find their earnings higher than before, whereas those in the rubber and rubber products industry appear to have made up a significant proportion of those migrant workers who found their present earnings higher than before. See Table 8.

Daily Working Hours

A major proportion (76.4 percent) of the migrant work force worked between seven and

TABLE 4
Percentage Distribution of Migrant Workers by Type of Residence After Migration, and by Sector/Industry

Sector/Industry	Type of Residence After Migration					
	Own Place	Rented Place	Employer's Place	Place Shared Among Friends	Relative's Place	Others
Manufacturing Sector						
Food	3.4	4.3	19.8	3.7	1.7	0.0
Beverage	6.9	8.2	6.5	11.1	1.7	15.1
Wood & cork	5.7	4.3	9.5	3.7	0.0	26.4
Printing & publishing	2.3	3.0	0.8	11.1	3.4	0.0
Rubber & rubber products	16.1	16.0	23.3	7.4	32.8	39.6
Non-metallic mineral products	1.1	0.0	9.5	0.0	0.0	0.0
Metal products	6.9	4.8	6.1	7.4	5.2	0.0
Non-electrical machinery	13.8	16.9	8.8	44.4	20.7	3.8
Commerce Sector	17.2	9.5	2.3	7.4	10.3	0.0
Services Sector	26.4	31.2	11.1	3.7	15.5	9.4.
Others	0.0	1.7	2.3	0.0	8.6	5.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
ALL SECTORS	12.1	32.2	36.5	3.8	8.1	7.4

TABLE 5
Percentage Distribution of Migrant Workers by Number of Changes in Employment and by Sector/Industry

Sector/Industry	Number of Changes in Employment							
	0	1	2	3	4	5	6	7
Manufacturing Sector								
Food	4.8	7.3	9.8	15.2	23.1	5.6	0.0	0.0
Beverage	4.2	8.0	9.0	3.0	26.9	5.6	0.0	0.0
Wood & cork	4.8	9.9	9.8	0.0	3.8	5.6	0.0	0.0
Printing & publishing	4.4	2.4	3.3	3.0	0.0	0.0	0.0	0.0
Rubber & rubber products	22.9	27.8	13.1	9.1	3.8	22.2	40.0	0.0
Non-metallic mineral products	2.3	5.2	2.5	0.0	0.0	0.0	0.0	0.0
Metal products	4.6	4.5	10.7	18.2	7.7	16.7	20.0	0.0
Non-electrical machinery	13.9	14.8	13.1	15.2	11.5	16.7	0.0	0.0
Commerce Sector	15.0	5.2	0.8	3.0	7.7	5.6	0.0	0.0
Services Sector	17.8	12.5	25.4	30.3	15.4	22.2	40.0	100.0
Others	5.3	2.6	2.5	3.0	0.0	0.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALL SECTORS	40.5	39.7	11.5	3.2	2.5	1.8	0.6	0.2

TABLE 6
Percentage Distribution of Migrant Workers by Type of Employment Before and After Shifts

Sector/Industry After Last Shift, i.e., Present Employment	Sector/Industry Before First Shift											
	Farming	Food	Beverage	Wood & Cork	Printing & Publishing	Rubber & Rubber Products	Non-metallic Mineral Products	Metal Products	Non-electrical Machinery	Commerce	Services	Others
Manufacturing Sector												
Food	7.0	50.0	N.A.	0.0	25.0	0.0	0.0	12.5	21.4	10.0	2.2	10.5
Beverage	6.8	16.7	N.A.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5
Wood & cork	7.2	0.0	N.A.	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.5
Printing & publishing	3.3	0.0	N.A.	0.0	75.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6
Rubber & rubber products	23.5	0.0	N.A.	0.0	0.0	100.0	0.0	0.0	0.0	20.0	0.0	34.2
Non-metallic mineral products	3.3	0.0	N.A.	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	5.3
Metal products	5.8	0.0	N.A.	0.0	0.0	0.0	0.0	75.0	14.3	20.0	4.4	2.6
Non-electrical machinery	14.4	0.0	N.A.	0.0	0.0	0.0	0.0	0.0	57.2	20.0	0.0	7.9
Commerce Sector	9.5	0.0	N.A.	0.0	0.0	0.0	0.0	0.0	0.0	20.0	0.0	5.3
Services Sector	14.4	33.3	N.A.	0.0	0.0	0.0	0.0	12.5	7.1	10.0	93.4	10.6
Others	4.8	0.0	N.A.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	100.0	100.0	N.A.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

N.A. = Not available.

TABLE 7
Percentage Distribution of Migrant Workers by Earnings and by Sector/Industry

Sector/Industry	Migrant Workers' Earnings (baht per month)						
	Below 500	500–999	1,000–1,999	2,000–2,999	3,000–3,999	4,000–4,999	5,000 and Above
Manufacturing Sector							
Food	12.5	7.4	6.3	3.4	0.0	0.0	0.0
Beverage	0.8	11.1	3.8	3.4	0.0	0.0	0.0
Wood & cork	0.8	7.4	11.7	0.0	0.0	0.0	0.0
Printing & publishing	4.7	3.1	3.5	0.0	5.0	0.0	0.0
Rubber & rubber products	32.8	37.5	2.5	0.0	0.0	0.0	0.0
Non-metallic mineral products	0.8	6.0	0.9	0.0	0.0	0.0	0.0
Metal products	6.3	4.1	9.2	5.2	5.0	0.0	0.0
Non-electrical machinery	18.8	8.9	20.9	19.0	10.0	0.0	0.0
Commerce Sector	5.5	3.1	10.4	31.0	35.0	40.0	37.5
Services Sector	14.8	8.7	25.6	32.8	35.0	60.0	62.5
Others	2.2	2.7	5.2	5.2	10.0	0.0	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALL SECTORS	12.1	48.2	29.6	5.5	2.0	1.0	1.6

TABLE 8
Percentage Distribution of Migrant Workers by Their Earnings Evaluation and by Sector/Industry

Sector/Industry	Earnings Evaluation			
	Higher Earnings than Before	Lower Earnings than Before	Same	No Answer
Manufacturing Sector				
Food	7.2	3.7	7.6	10.2
Beverage	2.0	23.7	5.4	0.0
Wood & cork	10.1	4.2	9.4	1.1
Printing & publishing	2.9	8.4	0.4	1.1
Rubber & rubber products	27.7	19.1	32.1	3.7
Non-metallic mineral products	2.7	5.1	5.4	0.0
Metal products	5.0	11.2	3.1	6.4
Non-electrical machinery	14.2	13.5	21.0	5.9
Commerce Sector	5.4	0.5	3.1	32.1
Services Sector	18.0	8.4	10.3	35.8
Others	4.8	2.2	2.2	3.7
TOTAL	100.0	100.0	100.0	100.0
ALL SECTORS	41.5	20.1	20.9	17.5

eight hours per day. About 10 percent worked between nine and ten hours, and 8.4 percent worked between 11 and 12 hours a day. A little over five percent worked less than seven hours per day. The picture is very much the same for all sectors/industries.

Prerequisites for Employment

Table 9 shows the percentage distribution of migrant workers according to their prerequisites for employment. The table shows that 42.9 percent of the migrant work force needed to undergo on-the-job training; 23.3 percent needed to have prior experience. Almost one third (29.6 percent) needed no specific training. As expected, the commerce and the services sectors required either professional training or prior experience to a much more significant extent than the manufacturing sector.

Source of Employment

Approximately 50 percent of the migrant work force in the survey found work through friends or relatives, while an approximately equal proportion found work for themselves. It is perhaps worth commenting that no migrant worker found work through the aid of the government labor agency. However, this is not really surprising considering the rather inactive stance the agency has adopted in this respect.

Plans to Change Employment

When asked whether they planned to change their employment, 20.5 percent of the migrant workers replied "yes," 33.1 percent replied "no," and the rest did not know.

TABLE 9
Percentage Distribution of Migrant Workers by Their Prerequisites for Employment and by Sector/Industry

Sector/Industry	Prerequisites for Employment			
	Professional Training	Prior Experience	On-the-job Training	No Specific Training
Manufacturing Sector				
Food	2.2	6.4	6.1	10.1
Beverage	0.0	6.4	4.8	11.1
Wood & cork	2.2	9.2	7.4	5.6
Printing & publishing	8.9	4.4	2.8	2.0
Rubber & rubber products	2.2	2.0	24.2	41.2
Non-metallic mineral products	0.0	2.4	2.6	5.6
Metal products	2.2	8.4	8.1	0.7
Non-electrical machinery	8.9	20.9	19.2	1.3
Commerce Sector	31.1	4.8	7.6	9.8
Services Sector	26.7	32.5	13.9	9.5
Others	15.6	2.6	3.3	3.1
TOTAL	100.0	100.0	100.0	100.0
ALL SECTORS	4.2	23.3	42.9	29.6

Those in the rubber and rubber products industry and the services sector appear to have made up a significant proportion of the affirmative and negative groups. In the case of the rubber and rubber products industry, the outcome could be explained by the relatively large number of respondents from that industry. It should be noted that this industry had a relatively large employment size. The same thing cannot be said about the services sector where the number of respondents was relatively small. See Table 10.

Desire to Change Employment

Respondents were asked whether or not they had any desire to change employment. Among those who did, the largest proportion (42.2 percent) gave dissatisfaction with remuneration as the reason. Migrant workers in the services sector appear to have been the most dissatisfied with employers. It is interesting to note that those in the wood and cork, printing and publishing, and the metal products industries, and the services sector showed a tendency towards out-migration as they made up the small percentage of migrant workers not satisfied with Haad-Yai. See Table 11.

Among those with no desire to change employment, the largest proportion (36.3 percent) gave job satisfaction as their motive. A significant proportion also gave satisfaction with place of employment and remuneration (16.9 and 10.7 percent, respectively) as their motives for their lack of desire for change in employment.

Desired Place and Type of Employment

Approximately 50 percent of those planning to change employment said they would still look for jobs in Haad-Yai. One fourth (25 percent) said they would go back to their place of origin, and the rest, another 25 percent, said they would seek employment elsewhere.

TABLE 10
Percentage Distribution of Migrant Workers by Plans to Change Employment, and by Sector/Industry

Sector/Industry	Plans to Change Employment			
	Yes	No	Don't Know	No Answer
Manufacturing Sector				
Food	5.0	9.0	6.7	0.0
Beverage	8.2	3.7	8.4	0.0
Wood & cork	6.8	8.5	6.3	16.7
Printing & publishing	3.2	2.3	3.9	0.0
Rubber & rubber products	24.2	25.7	20.2	0.0
Non-metallic mineral products	5.9	2.5	2.6	0.0
Metal products	7.8	3.1	7.1	33.2
Non-electrical machinery	9.6	10.2	18.7	16.7
Commerce Sector	5.0	9.6	9.4	16.7
Services Sector	21.9	24.0	11.0	16.7
Others	2.4	1.4	5.7	0.0
TOTAL	100.0	100.0	100.0	100.0
ALL SECTORS	20.5	33.1	45.9	0.6

About a third (31.3 percent) said they would look for the same kind of employment as the present one, and 20.3 percent would look for a different kind. Almost half (48.5 percent) did not know what sort of employment they would seek. See Table 12.

SUMMARY AND CONCLUSIONS

1. Migrant labor appears to form a very significant proportion of the total Haad-Yai work force. The majority of migrant workers were originally from the southern region, although quite a large number of female migrants in the services sector work force came from the north and the central regions.

2. The most important reason for migration appears to have been the search for employment. Migrant workers appear to have moved either on their own or with their families. After arriving in Haad-Yai most of them moved into their employers' residences or a rented place.

3. The rubber and rubber products and the non-electrical machinery industries, as well as the services sector, appear to have absorbed a significant proportion of the farming labor.

4. After their move to Haad-Yai, most migrant workers appear to have been rather stable with respect to employment, i.e., most of them changed jobs only once or not at all. Except for those in the food manufacturing industry and the commerce sector, job shifting outside of their sector/industry was practically non-existent for the other migrant workers.

5. Regarding earnings and employment position, the migrant work force did not appear to fare very well. The majority of them earned less than 1,000 baht a month. Likewise, most migrant workers remained in the same position despite shifting jobs. In relative terms, however, quite a significant proportion of the migrant workers

TABLE 11
Percentage Distribution of Migrant Workers by Reasons Given for Desire to Change Employment by Sector/Industry

Sector/Industry	Reasons for Desire to Change Employment								
	Dissatisfied With Place of Employment	Dissatisfied With Job	Dissatisfied With Employer	Dissatisfied With Colleagues	Dissatisfied With Remuneration	Dissatisfied With Haad-Yai	Better Jobs Elsewhere	Others	No Answer
Manufacturing Sector									
Food	0.0	3.3	0.0	0.0	4.5	0.0	6.5	10.0	0.0
Beverage	0.0	3.3	0.0	0.0	16.5	0.0	3.2	2.5	0.0
Wood & cork	0.0	0.0	0.0	25.0	12.4	25.0	0.0	5.0	0.0
Printing & publishing	0.0	3.3	0.0	0.0	2.2	25.0	3.2	5.0	0.0
Rubber & rubber products	0.0	36.7	25.0	50.0	20.2	0.0	54.8	0.0	100.0
Non-metallic mineral products	0.0	0.0	0.0	0.0	10.1	0.0	3.2	7.5	0.0
Metal products	0.0	23.3	0.0	0.0	6.7	25.0	6.5	2.5	0.0
Non-electrical machinery	0.0	6.7	0.0	0.0	14.6	0.0	0.0	15.0	0.0
Commerce Sector	60.0	10.0	0.0	0.0	1.1	0.0	3.2	12.5	0.0
Services Sector	40.0	10.0	75.0	25.0	9.0	25.0	16.1	37.5	0.0
Others	0.0	3.4	0.0	0.0	2.7	0.0	3.3	3.5	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
ALL SECTORS	2.4	14.2	1.9	1.9	42.2	2.9	14.7	19.0	1.8

TABLE 12
Percentage Distribution of Migrant Workers by Desired Employment Change, and by Sector/Industry

Sector/Industry	Desired Employment Change		
	Same as Present	Different	Don't Know
Manufacturing Sector			
Food	11.0	5.7	7.1
Beverage	1.2	5.7	11.0
Wood & cork	8.5	5.7	11.0
Printing & publishing	4.9	0.0	3.1
Rubber & rubber products	6.1	30.0	29.9
Non-metallic mineral products	4.9	17.0	0.0
Metal products	12.2	0.0	7.9
Non-electrical machinery	15.9	5.7	6.3
Commerce Sector	7.3	5.7	4.7
Services Sector	22.0	24.5	17.3
Others	6.0	0.0	1.7
TOTAL	100.0	100.0	100.0
ALL SECTORS	31.3	20.2	48.5

regarded themselves as better-off than before in terms of earnings.

6. On the whole, jobs for the migrant workers appear to have required more on-the-job training than any other kind of training.

7. The migrant workers found work for themselves or through friends and relatives. This finding, together with the finding that migrant labor formed a significant proportion of the Haad-Yai work force, suggests that the local government labor agency should perhaps play a more active role in the recruitment of migrant labor for suitable employment in the Haad-Yai industrial estate.

8. The possibilities of adopting other government pressures to encourage migration of suitable manpower into the industrial estate might also be explored, e.g., tax incentives, housing, other welfare benefits, etc. It would appear to be a futile exercise to create favorable conditions for investment in the industrial estate through the machinery of the Board of Investments without simultaneously creating favorable conditions for migration of labor into the estate.

9. Quite a significant number of the migrant work force were dissatisfied with their present employment at the time of this study and wished to change employment. Nearly half gave dissatisfaction with remuneration as the reason for their desire to change employment. Of those planning to change employment, half planned to move out of Haad-Yai.

10. The migrant work force in the wood and cork, printing and publishing, and the metal products industries, as well as the services sector, showed a tendency towards out-migration.

The findings of the survey have demonstrated a relatively significant role of migration in the industrial manpower potential of Haad-Yai. The study has attempted to identify important employment data concerning the migrants in order to contribute towards a better understanding of the migration picture of Haad-Yai.

SECTION III

Family Planning and Techniques

THE RELATIONSHIP BETWEEN SELECTED SOCIO-PSYCHOLOGICAL VARIABLES AND THE DECISION TO PRACTICE FAMILY PLANNING, JAKARTA

Bernadette N. Setiadi

The Family Planning Program, which was launched on a national scale in 1968, plays a definite role in the matter of population growth in Indonesia. If this program succeeds, it is estimated that by the end of this century the average population growth rate will be 1.26 percent and that the total population will be approximately 220 million. However, if the population growth rate maintains its present level, i.e., 2.5 percent, by that time the population will exceed 280 million (Iskandar 1971).

Jakarta's population increase will be even worse since its growth rate is the the most rapid in the whole of Indonesia. It has been suggested that the population of Jakarta may reach 16 million by the end of this century (Jones 1975). This increase will be a result both of natural population increase (2.6 percent) and of urbanization (3.1 percent). It is obvious that while efforts in eliminating urbanization are being carried out, the family planning (FP) program also has an important role to play in slowing down the population growth rate in Jakarta.

Efforts to introduce the idea of FP in Jakarta have shown that there are still many obstacles among which are the following:

1. Until 1974/75 only 324,926 (about 28 percent of women in the fertile age) were registered as FP acceptors. This figure is still doubtful because investigations into the reliability of acceptors' monthly reports by the BKKBN Jakarta showed that out of the total number of acceptors registered, only 56 percent in 1972 and 68 percent in 1973 proved to be real acceptors.
2. The Evaluation of the National Family Planning Program for the period 1974–1975 showed that Jakarta was one of the areas which did not achieve its target of acceptors (94.7 percent).
3. Family planning fieldworkers still have difficulty in motivating people, particularly those who live in the outskirts of the city.

It was the above considerations, plus the lack of research on the role of socio-psychological variables in FP which encouraged the carrying out of this study. Hence, the following aims were formulated for this study:

1. To obtain more information concerning the variables which are related to the decision to practice FP;
2. To make this information available so that more appropriate and effective methods and approaches may be used in the FP program, particularly in Jakarta; and
3. To provide a model for providing a research methodology that can more adequately account for the role of socio-psychological variables in FP.

THE PLAN OF THE STUDY

Surveys of KAP in developing countries show that a large number of women in the childbearing age state that they do not wish to have any more children and that they are

interested in contraceptive methods. However, when FP information and services are made available, only about 20 percent of these women utilize this information and these services (Fawcett 1970: 98).

Results of research carried out in Jakarta and its surrounding areas are no different. A KAP research in 1968 showed that 62 percent of the women agreed with FP. Another research in Bekasi (Abdurahman 1973) showed that 67.4 percent of the women felt that they had more children than they actually desired. But, in spite of this, in 1974/75, less than 28 percent of the women were registered as acceptors in Jakarta. Thus, although a large number of them may have agreed with the idea of FP, only a small proportion of the women had decided to actually practice it.

The present study attempted to identify the socio-psychological variables related to one's decision to accept FP. The method used in this study was a comparison of two groups, namely, one consisting of those people who had already decided to practice FP and the other consisting of those who agreed with FP but did not practice it. The purpose of this comparison was to determine which of the several socio-psychological variables were perceived as significant factors in making the decision to practice FP. We expected to identify the variables in which the two groups differed.

Variables Investigated

In selecting the variables investigated by the study two considerations were taken into account. First, only those variables considered to have a relationship with the decision to practice FP were selected. Second, those variables which, on the basis of previous research proved to have an influence on the decision to practice FP, were to be controlled. Based on these considerations the following variables were chosen:

1. *Attitude towards and knowledge of FP methods.*
2. *Influence of the reference group on the decision to practice FP.* This reference group included the following: formal leader; community "informal" leaders; neighbors/friends; relatives of an older generation; relatives of the same generation; and husband. It was felt that this reference group does influence the decision to practice FP because when one is faced with a new idea (in this case, the idea of FP) and is undecided as to what action to take, the opinion of the reference group may help to determine one's attitude. This reference group was broken down in detail to see which one(s) had the most influence in the decision to practice FP.
3. *Degree of the wife's modernity.* The variable was believed to be related to decision to practice FP because in America, Japan, and West European countries, participation of women in FP is very great indeed. Modernity, in this case, is manifested in the woman's perception of the spouse's role as husband, i.e., the more modern a woman is, the more she does not agree that men have special rights or privileges. Modernity is also seen in the manner in which leisure time is used, i.e., the more modern a woman is, the more her leisure time will be spent on activities outside the home.
4. *Perceptions of necessary expenses for bringing up children.* These may be revealed in expenditures for food and clothing of families without children and the additional expenditure that one more child entails. These perceptions may also be seen in the cost of higher education for children.
5. *Attitude towards family size.* This was determined from the number of children considered ideal for the financial condition of the respondent.
6. *Sex preference for children.* This variable was determined from the extent to which the desire of the parents to have children of a certain combination of sexes affects their desire to have more children than what is considered ideal for their financial condition.

The control variables in the two groups were place of residence, number of living children, and level of education.

Sample

The sampling area chosen for the study was Kayu Putih, a sub-district of Gadung in East Jakarta. The reason for this choice was the heterogeneous nature of the area, i.e., the presence of FP clinics which provide widespread and organized services and which closely cooperate with FP fieldworkers, plus the fact that the FP program has been operating in this area since 1969.

Two groups of women comprised the sample. The first group consisted of wives between the ages of 15 and 45 who had decided to practice FP. (They are hereafter referred to as "acceptors" in this study.) The second group consisted of wives who were also between the ages of 15 and 45 but who had decided not to practice FP, although they were favorable to FP in principle. (They are hereafter referred to as "non-acceptors" in this study.)

Women in the sample were categorized as "acceptors" if they had been using contraceptives (available from FP clinics) continuously for at least six months prior to being interviewed. They were categorized as "non-acceptors," however, if they had never used contraceptives before or if they had stopped using these after a period of less than six months. The six-month period of continuous use was chosen since it was felt that people generally require a certain period of time to assess a new idea before making a decision on it.

These two groups of women were then matched according to their place of residence with pairs of acceptors and non-acceptors chosen from the same or nearby *yukun tetangga* (the smallest unit comprising 30–50 houses). In this way it was ensured that the distance of the respondents' houses from the FP clinic was about the same and their chances of being visited by the travelling medical teams were also about equal. The two groups were also matched according to the number of their living children, i.e., whether they were similar or different in this regard. When the number of children differed, the respondents in the non-acceptor group had more children than those in the acceptor group. We, therefore, eliminated the possibility that the acceptors adopted FP because they had more children than their counterparts in the non-acceptor group. Finally, acceptors and non-acceptors were matched in terms of educational level.

The total sample consisted of 195 couples. They were selected from a list of all the names and addresses of acceptors from the FP clinic.

Collection of the Data

A structured questionnaire was used for interviewing the respondents. It was pre-tested on 52 women of childbearing age before it was set in final form.

Thirteen married women living in the village of Kayu Putih served as interviewers for the study. These women had a minimum of upper secondary school education and were active in local activities. Before they carried out the interviews they underwent training in the techniques of interviewing and the contents of the questionnaire.

To check whether or not the interviews were carried out properly, two "spot checkers" revisited 100 of the 390 respondents at random and asked them 20 percent of the questions again. The result of this process showed that all 390 respondents were actually interviewed, although some of the answers given by the respondents on the second interview were inconsistent with those given at the first interview.

The responses were then tabulated manually by six undergraduates. Cross-tabular analysis was applied and chi-square (χ^2) statistics were estimated and tested for significance.

FINDINGS OF THE STUDY

The findings of this study are presented as follows: selected background characteristics of acceptors and non-acceptors, their attitude towards and knowledge of FP methods, opinion of the reference group on FP, the wives' level of modernity, perception of children's education, attitude towards ideal family size, and sex preference for children. Some additional findings conclude this section.

Selected Background Characteristics of Acceptors and Non-acceptors

Table 1 presents a comparison of the two groups in this study in terms of selected background characteristics. It will be noted that the two groups did not differ significantly except in terms of the wife's, i.e., the respondent's, age.

TABLE 1
A Comparison of Acceptors'/Non-acceptors' Selected Background Characteristics

Selected Background Characteristic	χ^2	Significance
Husband's education	3.36	N.S.
Husband's age group	1.88	N.S.
Respondent's age group	12.94	*
Respondent's age at time of marriage	0.56	N.S.
Period between time of marriage and 1st child's birth	5.72	N.S.
Food expenses per month	8.34	N.S.

N.S. = Not significant.
* Significant at 0.05 level.

Attitude Towards and Knowledge of Family Planning Methods

The respondents were asked whether or not they agreed with the following reasons for birth control or abortion.

1. The wife's health is poor.
2. The family income is insufficient for daily needs.
3. The family wishes their present children to have a good education.
4. The family wishes to wait for three years before having the second child.
5. Although the family can afford it financially, they feel three children is enough.
6. The family wishes to wait for two years before having the first child.

Although Table 2 shows that the acceptor group agreed with more of the above reasons than the non-acceptor group (specifically the third and fourth reasons), this difference

TABLE 2
Frequency Distribution of Respondents by Responses to Questions on Reasons for FP

Response to Questions on Reasons for FP	Non-acceptor	Acceptor
Agree with 3 out of 6 reasons	11	9
Agree with 4 out of 6 reasons	45	31
Agree with 5 out of 6 reasons	72	75
Agree with all 6 reasons	67	80

between the two groups is not significant ($\chi^2 = 3.98$). Therefore, it can be said that the acceptors and non-acceptors in this study all agree to birth control/abortion for more or less the same reasons.

The analysis of the data showed that the pill and the intra-uterine device (IUD) were well known by both groups. However, there was a significant difference in the respondents' knowledge of how to use these methods. This difference is understandable because the non-acceptors have had very little experience with these methods. There was a significant difference between the acceptors and non-acceptors in whether or not they had heard of the condom, vaginal pill, and sterilization. However, on their knowledge of how these methods are used, there was no significant difference (see Tables 3 and 4).

From Table 5 we can see that there was a significant difference between the two groups in terms of principal sources of information about these methods. The principal sources of information for the acceptors were the FP fieldworkers and medical teams (doctor, midwife, clinic staff) while the principal information sources for the non-acceptors were their friends and families.

Opinion of the Reference Group on Family Planning

The respondents were queried about the influence of four reference groups on their

TABLE 3
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Type of FP Method Heard of

Type of FP Method Heard of	χ^2	Significance
Pill	—	N.S.
IUD	1.34	N.S.
Condom	9.90	*
Vaginal pill	11.36	**
Sterilization	11.34	**

N.S. = Not significant.
* Significant at 0.01 level.
** Significant at 0.001 level.

TABLE 4
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Knowledge of FP Method Heard of

Knowledge of FP Method Heard of	χ^2	Significance
Pill	68.46	**
IUD	22.25	**
Condom	1.05	N.S.
Vaginal pill	—	N.S.
Sterilization	2.81	N.S.

N.S. = Not significant.
** Significant at 0.001 level.

TABLE 5
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Principal Sources of FP Information

Principal Source of FP Information	χ^2	Significance
Pill		
PLKB/Medical team	19.00	*
Neighbors and family	25.00	*
Mass media	0.54	N.S.
Not stated	—	N.S.
IUD		
PLKB/Medical team	19.80	*
Neighbors and family	11.54	*
Mass media	0.11	N.S.
Not stated	3.84	**
Condom		
PLKB/Medical team	6.06	**
Neighbors and family	5.45	**
Mass Media	—	N.S.
Not stated	0.35	N.S.

N.S. = Not significant.
* Significant at 0.001 level.
** Significant at 0.05 level.

decision to practice FP. These groups were the village head and informal leaders of the community, friends and neighbors, relatives, and husbands.

Village head and informal leaders
There did not seem to be much influence from the opinion of the village head on the respondents' decision to practice because a large number of the respondents (191 non-acceptors and 188 acceptors) did not know the opinion of the village head as they had never heard him discussing this matter. Likewise, the opinion of the informal leaders had little influence. Only 24 acceptors and 17 non-acceptors had heard of these leaders' opinions.

Friends and neighbors
Findings showed that there is no significant difference between the acceptors and non-acceptors in their perception of how often their friends/neighbors talked about FP. As to their knowledge of whether or not their friends/neighbors practiced FP, the results in Table 6 indicate that acceptors tended to know more friends/neighbors (three and above) who practiced FP.

Other related questions were asked concerning the respondents' friends'/neighbors' predisposition to practice FP along the following topics: opinion of friends/neighbors on FP, aspects of FP discussed, reason(s) of friends/neighbors for practicing FP, their degree of satisfaction with FP practice, resource person(s) consulted by friends/neighbors prior to practicing FP, and attitudes of friends/neighbors towards those who practice FP. The chi-square values are presented in Table 7 and all of these are found to be not significant.

TABLE 6
Frequency Distribution of Acceptors/Non-acceptors by Knowledge as to Whether or Not Friends/Neighbors Practice FP, and Chi-square Values

Whether or Not Friends/Neighbors Practice FP	χ^2	Significance
No		
Yes, 1-2 persons	12.48	*
Yes, 3-4 persons		
Yes, more than 4 persons		

* Significant at 0.01 level.

TABLE 7
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Responses to Questions on Friends'/Neighbors' Predisposition to Practice FP

Topic	χ^2	Significance
Opinion of friends/neighbors on FP	0.04	N.S.
Aspect of FP discussed	0.46	N.S.
Reason(s) of friends/neighbors for practicing FP	2.55	N.S.
Whether or not result of practicing FP is satisfactory	3.56	N.S.
Person consulted by friends/neighbors before deciding to practice FP	2.97	N.S.
Other attitudes of friends/neighbors towards those who practice FP	0.18	N.S.

N.S. = Not significant.

Relatives

This reference group was subdivided into relatives from an older generation and relatives from the same generation. With reference to the former, the respondents were asked two questions: (1) have relatives from an older generation ever mentioned FP in their discussions and (2) what are these relatives' opinions on FP? Table 8 shows the responses to the first question. Relatives of acceptors tended to discuss FP more frequently. However, a considerable portion from both groups claimed that their relatives never discussed this matter. It is also noted that the estimated chi-square (13.04) was found to be significant at the 0.01 level, affirming an association between the frequency of mention by their relatives and the decision to practice FP. The results generated by the second question were found to be not significant.

With respect to the second group of relatives, the above questions together with six others were asked. The additional six questions were:

1. What aspect of FP do they discuss?
2. Are any of them practicing FP?
3. What are their reasons for practicing FP?
4. What has resulted from this practice of FP?
5. Whom did they ask before deciding to practice FP?
6. What are the attitudes of other members of the family towards those who practice FP?

TABLE 8
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Responses to Questions Regarding Older Generation Relatives

Question Regarding Older Generation Relatives	χ^2	Significance
Have relatives from an older generation ever mentioned FP in their discussions?	13.04	*
What are these relatives' opinions on FP?	1.64	N.S.

N.S. = Not significant.
* Significant at 0.01 level.

The estimated chi-square values for these cross-tabulations and their corresponding significance levels are presented in Table 9.

Two observations can be made from Table 9. First, relatives of the same generation as the acceptor group speak of FP more often than those of the non-acceptor group. This difference is significant. Among those who spoke of FP almost all agreed with it. Second, although there is no significant difference between the two groups in matters such as reason for practicing FP, results of practicing FP, persons asked before the decision to practice FP was made, as well as attitudes of other members of the family towards those who practice FP, there is a very significant difference in the number of relatives of the same generation known to practice FP.

TABLE 9
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Responses to Eight Questions Regarding Same Generation Relatives

Question Regarding Same Generation Relatives	χ^2	Significance
Do relatives from the same generation ever mention FP in their discussions?	14.16	*
What are these relatives' opinions on FP?	0.12	N.S.
What aspect of FP do they discuss?	2.89	N.S.
Do any of these relatives practice FP?	24.66	**
What are their reasons for practicing FP?	4.69	N.S.
What has resulted from their practice of FP?	0.96	N.S.
Whom did they ask before deciding to practice FP?	0.55	N.S.
What are the attitudes of other members of the family towards those who practice FP?	2.88	N.S.

N.S. = Not significant.
* Significant at 0.01 level.
** Significant at 0.001 level.

TABLE 10
Frequency Distribution of Acceptor/Non-acceptor by Whether or Not Same Generation Relatives Practice FP, and Chi-square Values

Whether or Not Relatives of the Same Generation Practice FP	Non-Acceptor	Acceptor	χ^2	Significance
No	96	68		
Yes, 1-2	76	64	24.66	*
Yes, 3-4	14	34		
Yes, more than 4	9	29		

* Significant at 0.001 level.

Table 10 shows that most of those in the non-acceptor group did not have relatives in the same generation who practiced FP, or, if they did, there were only one or two such relatives. Those relatives of the acceptor group known to practice FP were more in number.

Husband

The respondents were asked about their husband's predisposition to practice FP. Three questions were framed for this purpose:

1. Does the husband discuss FP?
2. What is the husband's opinion of FP?
3. What aspect of FP is discussed?

The results are presented in Table 11. They show that more husbands from the acceptor group spoke of FP than those from the non-acceptor group. This is a very significant difference. At the same time, more husbands in the acceptor group agreed with the idea of FP. Again, there is a very significant difference between the two groups in this matter. However, there is not much difference between the two groups concerning the aspect of FP discussed by the husband. Those respondents who perceived that their

TABLE 11
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Responses to Questions Regarding Husband

Question Regarding Husband	χ^2	Significance
Does the husband speak of FP?	68.36	*
What is the husband's opinion of FP?	24.72	*
What aspect of FP is discussed?	2.93	N.S.

N.S. = Not significant.
* Significant at 0.001 level.

husbands agreed with FP but had not, as yet, decided to practice it, gave the following reasons: absence of need to practice FP since spacing of their children is wide enough using their own method, desire to have more children, fear of side effects, and other reasons, e.g., physical condition does not allow practice of FP.

Modernity

Level of modernity was assessed in terms of the respondents' perception of "sex roles," particularly with reference to their husbands' specific rights as defined in the following terms:

1. Generally, important decisions in the family must be made by the husband.
2. A husband may reject the wife's request to help in the house after his return from a full day's work.
3. A man may go out of the house by himself whenever he wishes.
4. Nursing and educating the children are a woman's job.
5. A wife should preferably not be present when the husband is entertaining male guests.

As shown in Table 12, there is no significant difference between the acceptors and non-acceptors with respect to their perception of "sex roles."

Generally speaking, it may be said that in this study, the influence of modernity on the decision to practice FP cannot be established because both acceptor and non-acceptor groups showed a low degree of modernity.

TABLE 12
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Responses to Questions Regarding Sex Roles

Response to Questions Regarding Sex Roles	Non-Acceptor	Acceptor	χ^2	Significance
Disagree with all 5 questions	21	22		
Agree with 1 out of 5 questions	33	39		
Agree with 2 out of 5 questions	49	44	2.50	N.S.
Agree with 3 out of 5 questions	40	47		
Agree with 4 out of 5 questions	36	32		
Agree with all 5 questions	16	11		

N.S. = Not significant.

Perception of Children's Education

Another factor considered to be influencing the decision to practice FP was the respondents' perception of children's education. A number of questions were asked to get some objective assessments on this regard. The questions were: What is the minimum education required for children to earn a living? What level of education is desired for children? Would this level be attainable by the respondent's children? The results are presented in Table 13, which shows that the perception of children's education did not influence the respondents' decision to practice FP because there is no significant difference between the acceptors and non-acceptors in their perception of the education necessary for their children.

Attitude Towards Ideal Family Size

Ideal family size has been regarded as an important factor in influencing the decision to

TABLE 13
Chi-square Values of Acceptor/Non-acceptor Comparison in Terms of Their Responses to Questions Regarding Children's Education

Question Regarding Children's Education	χ^2	Significance
Minimum education required for children's survival	5.62	N.S.
Education desired for the children	3.86	N.S.
Whether or not children could accomplish the education desired by the parents	4.86	N.S.

N.S. = Not significant.

practice FP. In this study the respondents were asked how many children a family in their financial status should have. The results are presented in Table 14.

More acceptors than non-acceptors chose one to three children as the ideal number for a family in their financial situation, with the difference between the two groups being quite significant.

TABLE 14
Frequency Distribution of Acceptor/Non-acceptor by Ideal Number of Children, and Chi-square Values

Ideal No. of Children a Family in Respondents Situation Should Have	Non-Acceptor	Acceptor	χ^2	Significance
1-3	75	98	5.50	*
More than 3	120	97		

* Significant at 0.05 level.

Sex Preference for Children

The respondents who had fixed a certain number of children to be ideal, were faced with several combinations of sex and asked if these combinations would make these families who already had children want more. Comparisons between the acceptors' and non-acceptors' answers may be seen in Table 15.

Except for the "all girls" category, there was no significant difference between the two groups in the matter of how the ideal combination of children influences the desire to want/not to want more children. It may be said that a large number of acceptors as well as non-acceptors were of the opinion that if a family did not yet have a girl or boy, they tended to have more children although they already had the number of children considered ideal for their financial situation. But, not having any boys yet did significantly influence the family to postpone their decision to practice FP.

Additional Findings

Some respondents were also asked why they never practiced FP. The reasons given are found in Table 16. Out of the above reasons only two, i.e., lack of need and desire to practice FP, came from those who were not interested in FP. About 25 percent of the respondents felt some psychological constraints.

TABLE 15
Frequency Distribution of Acceptor/Non-acceptor by Responses to Questions Regarding Sex Preference for Children, and Chi-square Values

Would the Family Want More Children If They Have		Non-Acceptor	Acceptor	χ^2	Significance
All boys	Yes:	157	145	2.42	N.S.
	No:	37	50		
1 boy & 1 girl	Yes:	29	27	0.10	N.S.
	No:	165	167		
2 boys & 1 girl	Yes:	12	5	2.63	N.S.
	No:	174	171		
All girls	Yes:	159	142	4.64	*
	No:	35	53		
1 girl & 1 boy	Yes:	29	23	0.80	N.S.
	No:	165	171		
2 girls & 1 boy	Yes:	14	7	2.08	N.S.
	No:	172	169		

N.S. = Not significant.
* Significant at 0.05 level.

TABLE 16
Frequency Distribution of Respondents by Reasons for Never Practicing FP

Reason	No.	%
Fear of side effects	51	25.76
Desire to have more children	37	18.69
Inability to obtain permission	37	18.69
Lack of need to practice FP	26	14.14
Lack of desire to practice FP	24	12.12
Others	21	10.61

From Table 17 it may be seen that the most frequently used FP methods were the pill, followed by the IUD. Moreover, the higher the husband's education, the more methods used (see Table 18).

TABLE 17
Frequency Distribution of Respondents by FP Methods Used

FP Method Used	No.	%
Pill	166	63.36
IUD	60	22.90
Condom	29	11.37
Others	7	2.67

TABLE 18
Frequency Distribution of Respondents by Husbands' Education, by FP Methods Used, and by Average Number of FP Methods Used

Husband's Education	No.	Methods Ever Used				Average No. of Methods Ever Used
		Pill	IUD	Condom	Σ	
None	10	9	1	—	10	1.00
Primary	53	48	10	2	60	1.13
Lower sec.	37	32	10	—	42	1.14
Upper sec.	69	52	25	16	93	1.35
University	26	26	14	11	51	1.96

When compared with the non-acceptors, the acceptors in the study were visited by the FP fieldworker significantly more often in the past year (see Table 19). Nevertheless, those who were visited comprised only 23.85 percent of the total number of respondents. Another noteworthy point is that in both cases of acceptors and non-acceptors, the fieldworker spoke only with the wife. Moreover, a repeat visit seldom occurred. However, when one realizes that there are only five FP fieldworkers serving the six villages (of which Kayu Putih is one) in Pulau Gadung, the single visit already represents the maximum.

From interviews with the fieldworkers, it was found that they earned an honorarium of Rp.10,000 and had a target to fulfill each month. These factors lessened their motivation to undertake follow-up visits which they themselves admitted were necessary.

TABLE 19
Frequency Distribution of Acceptor/Non-acceptor by Number of Times FP Fieldworkers Visited Them in the Past Year and Chi-square Values

No. of Times FP Fieldworkers Visited Respondents	Non-Acceptor	Acceptor	χ^2	Significance
Never	157	140		
Once	30	29	9.84	*
2-3	7	18		
More than 3	1	8		

* Significant at 0.05 level.

SUMMARY AND CONCLUSIONS

The respondents were matched in terms of number of children living, education, and place of residence. Being fully aware that there was still an unknown number of other variables which were not included in the scope of the study, this research covered six variables which were presumed to influence the decision to practice FP, namely, attitude towards abortion/birth control, opinion of reference group on FP, degree of wife's modernity, perception of children's education, ideal family size, and preference for children's sex. The respondents had obtained information on FP methods, and some of them were interested in trying out these methods. However, there were others who were not interested in trying them out. Those who had tried these methods evaluated the

results and those who had good results decided to continue using these methods. Out of those who did not get good results, some went on to try other methods while some stopped trying altogether. The result of this change to other methods was also evaluated, and those who had good results continued with the new method while the others who had bad results stopped trying. Those who had reached the stage of deciding to continue using a method were called the "acceptor" group while those who were not yet interested in trying a method or had stopped trying before reaching the decision-making stage were called the "non-acceptor" group.

By comparing the two groups in terms of the variables investigated by the study, we were able to find the variables which are associated with the decision to practice FP. In this connection, it is important to point out that if there was no significant difference between the two groups in a certain variable, it does not necessarily mean that that variable is unimportant. It only means that in this research, the said variable(s) had the same influence in both groups. But, only those variables in which the two groups differed significantly can be considered as factors associated with the decision to practice FP.

In this research, we did not see any significant association between the attitude towards FP and the decision to practice it because the two groups agreed with abortion/birth control under more or less the same conditions. One interesting point is that 50.25 percent of the non-acceptors and 45.64 percent of the acceptors did not agree that a family which does not yet have any children should practice FP.

An indirect question often asked in KAP studies to elicit the respondent's attitude towards FP is: "Do you (wife/husband) approve if a family exerts efforts to prevent/space out pregnancies?" Bearing in mind the results of this research and the big difference between those who say they agree with FP in KAP studies and those who actually practice it, we can conclude that agreement with FP as solicited by questions such as the above cannot always be taken as a fact.

The opinion of the reference group, i.e., formal and informal leaders, friends and neighbors, on FP are not significantly associated with the decision to practice FP because there was no significant difference between the two groups in this aspect. However, as was shown earlier the more intimate the reference group, the more apparent was the influence of their opinion. Both acceptors' relatives in the same generation and in older generations spoke more often of FP and those who spoke of FP generally agreed with it. Thus, the acceptors had more relatives who agreed with FP. The number of friends/relatives known to practice FP also influenced the decision to practice it.

Among the various reference groups/persons, the husband was the one who held the most important role because most of the husbands discussed and agreed with practicing FP. This is supported by the fact that more than 80 percent of the acceptors as well as non-acceptors said that their friends, neighbors, and relatives asked the husband's opinion before deciding to practice FP. The respondents themselves said that they would ask their husbands' opinion before making a decision on something new. At the same time most of the respondents agreed that men do have special rights. It was also found that the husband's educational attainment determined the number of attempts at FP. From these findings, we can conclude that the husband plays a dominant role in the family, and a decisive (probably more decisive than the wife) role in deciding whether or not to practice FP.

Both groups of acceptors and non-acceptors had equally low degrees of modernity. Although a high degree of modernity was hypothesized to influence the decision to practice FP, the role of this variable in Indonesia is still minimal and will remain so in the immediate future. This is because the majority of Indonesian women who live in the small towns and rural districts have a lower degree of modernity than the research sample taken in Jakarta, where the impact of modernity is felt more intensely.

There is no significant difference between the two groups in their perception of the

level of education necessary to earn a living, the level of education desired for their children, and their readiness to help support the education of relatives' children when the former have economic difficulties.

Although the respondents in both groups had determined the level of education desired for their children, 60 percent said that they did not know how much it would cost to educate their children. Therefore, it may be concluded that the perceived cost of children's education did not influence the decision to practice FP as the majority of the respondents did not have any idea of the amount such education required.

Most acceptors chose three children or less as the ideal family size for families in their financial situation. Therefore, the conclusion is that consideration of a small family, i.e., three children or less, had some bearing on their decision to practice FP.

Significantly more non-acceptors said that families which already had the ideal number of children for their financial situation may choose to have more children if they did not have a son. Notwithstanding this, more than 70 percent of the respondents (both acceptors and non-acceptors) were of the opinion that families which already had the ideal number of children for their financial situation may choose to have more children if they did not as yet have a desired son or daughter. Thus, we can conclude that the majority of the respondents (both acceptors and non-acceptors) tended to postpone the decision to practice FP when they did not have a son or a daughter yet. But, if their desire to have sons is compared with the desire to have daughters, then the desire to have sons is more significant.

The acceptor group had a better knowledge of FP methods as each member of this group had tried to least one method of contraception. When looking at the chief sources of information on these methods, there is a significant difference between the acceptors and non-acceptors. For the acceptors the chief information sources were the FP fieldworker and medical team. For the non-acceptors it was friends or families. The acceptors were also visited more often by FP fieldworkers than the non-acceptors were.

From these findings it may be concluded that the FP fieldworkers and medical teams had a significant influence on the decision to practice FP. This can be seen from the fact that when the FP fieldworkers and medical team were the chief information sources, the information was generally directed at motivating the recipient and follow-up action was usually taken in the form of a repeat visit by the fieldworker which, according to this study, had a significant influence in itself. On the other hand, when the chief sources of information were friends or families, the information was generally in the form of general discussion only, without any specific aim. Besides, the information given may not have been accurate.

Among those who had not yet tried any FP method, only those who gave the reason as the lack of need to practice FP were truly not interested. Those who desired to have more children were not interested at the time of the interview, but may be interested in the future. Reasons such as the above, as well as the fear of side effects, inability to obtain permission, and lack of desire to practice FP at the moment are actually indicative of psychological obstructions which, given the correct approaches, could be eliminated. More detailed explanation given by persons with sufficient knowledge as well as follow-up visits and encouragement without force could help to eliminate the feeling of fear and doubt. Approaches which include the husband and other adult members of the family could help overcome the objections from these persons.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Most non-acceptors considered the ideal family size to be more than three children. For the FP program which strives to propagate the idea that "two is enough," an ideal size of more than three children poses a problem which must be overcome. This problem is all

the more acute when we recall the fact that the actual number of children often exceeds what is considered ideal.

Preference for sons is one obstructing factor to FP programs in many countries. In this research, besides finding that preference for sons is significantly associated with the decision to practice FP, it was also found that more than 70 percent of the respondents (both acceptors and non-acceptors) tended to have more children than what they considered as ideal, particularly when they did not as yet have sons or daughters. This means that besides the preference for sons, the desire to have either sons or daughters is a bigger obstruction.

As long as attitudes such as the above prevail in our society, there will be problems faced by the FP program in fulfilling its objectives. Therefore, efforts should be accelerated to change these attitudes to become more "favorable" to FP, such as smaller ideal family sizes and elimination of sex preference where children are concerned.

Several findings in this study have indicated that the husband holds a very important role in making decisions in the family, including the decision to practice FP. This was noted by both the acceptors and non-acceptors. But, in efforts to propagate the FP idea and recruiting new acceptors, the FP fieldworkers hardly ever approached the husband. Out of the 93 visits conducted in the past year by FP fieldworkers, only five involved the husbands in their explanations. The reasons given for this was that it was easier to meet with the wives than the husbands. If this is true, then there is a great probability that the same approach is used in most of the other districts. This means that the FP program does not yet have the necessary approach to speed up the increase in the number of acceptors. The importance of the role of the husband in the decision to practice FP is suggested by the sample of wives in Jakarta, the majority of whose husbands have had a primary education and have enjoyed more progress and development than their counterparts who live in the small towns and rural districts. There is a great possibility that the role of the husband in the rural families is even more crucial in the decision to practice FP. For the success of the family planning program, it is imperative that the husband be included in every effort to recruit new acceptors.

The FP fieldworkers and medical teams as principal sources of information regarding FP methods have a positive influence on the decision to practice FP. Besides this, follow-up visits by the FP fieldworkers are likewise as important. The trial period, which will determine whether or not a prospective acceptor will become a stable acceptor, is often influenced by the extent of motivation during that period. If, during this period, a problem arises, the prospective acceptor will tend to stop trying the method. With continued encouragement from the FP fieldworkers, the prospect will be motivated to continue trying to overcome any problems she encounters.

Looking at the two sources of information mentioned above, the FP fieldworker has wider possibilities for action. The facts indicate that for the past year FP fieldworkers were successful in visiting 23.84 percent of all respondents. Of this number only a small proportion had a repeat visit. Looking at the need for reliable information sources and the necessity for repeat visits, this proportion seems very small indeed. However, when we look at the area and size of the district (Pulau Gadung) which is served by five FP fieldworkers, then what they have achieved can be regarded as the maximum. But, it is important for us to note that the FP fieldworkers have a fixed target of new acceptors to be achieved and an honorarium of Rp.10,000. These factors lessen their motivation to conduct repeat visits, since they give more importance to getting new acceptors and, when possible, obtaining "incentives" for each addition of acceptors, than to conducting repeat visits. These repeat visits, although important, do not yield any "incentives" whatsoever.

From these observations, it is clear that as a source of information and as a motivator, the FP fieldworker has an important role in ensuring the success of the FP program. But,

the present workers, with their present system and division of work, are not effective in serving those who require information or follow-up visits.

The main reason given by those who stopped using the pill and IUD is physical discomfort. Bearing in mind that these two methods are the most widely used, it is absolutely necessary to conduct medical research into the veracity of these complaints. If there is no truth in the complaints, then the Family Planning Board, based on the results of such research, should officially refute them. If these complaints are true, then efforts should be made to overcome the problems. There are two possible ways of doing this:

1. Make available a better type of pill and IUD as replacements for the present ones used. These may cost more money but may also result in more stable acceptors.
2. Continue with the use of the present pill and IUD but make available more intensive after care services.

The question of "after care" should be studied more carefully. In this study, new acceptors who stopped using the pill and IUD because of physical discomforts did so as a result of lack of "after care." If the village of Kayu Putih, which has a good Community Health Centre and well-organized mobile medical teams, still experiences problems of "after care" service to FP acceptors, then how much more difficult is it in other areas where the health service is not as efficient as in Kayu Putih? More intensive after care efforts would minimize the risk of having a large number of drop-outs who would then be difficult to bring back because of their negative experience.

From the above discussion, it can be seen that some of the problems encountered will require a long period of time to overcome. But there are also certain problems which may be solved more easily. Some suggestions to make the FP program more effective are as follows:

1. Conduct a study to check the physical discomforts suffered by users who have stopped using the pill and the IUD.
2. Intensify the after care service to new acceptors.
3. Make the FP fieldworker a more effective source of information and a motivator by increasing the number of fieldworkers and limiting the areas served by them and by revising the system of work and incentives so that these fieldworkers are encouraged to conduct follow-up visits which are important to stabilize new acceptors.
4. Develop approaches which would be especially aimed at motivating the husbands to be favorable towards FP.
5. Promote favorable attitudes towards a smaller ideal family size and the elimination of sex preference for children.

COMMERCIAL MARKETING OF CONTRACEPTIVES IN MALAYSIA: THE NON-PROGRAM USER SEGMENT

Sieh Lee Mei Ling

The establishment of the National Family Planning Board (NFPB) by the government of Malaysia in 1965 has brought about considerable success in selling the idea of family planning (FP) and delivering the methods for reducing fertility (Johnson et al. 1978: 215-230; Nor Laily Aziz 1978). However, it is also recognized that a substantial proportion of contraceptive users do not obtain their supplies from officially organized clinics established by "public sector" programs, but from non-program "private sector" sources such as pharmaceutical stores, medical practitioners, etc.[1]

Thus far, studies on FP have concentrated primarily on official programs (Fong 1976; Chee and Fong 1975). The nature of distribution through commercial channels outside the programs has been virtually unexamined despite the belief that marketing techniques may be effectively employed to widen acceptance of contraceptive methods (Potts 1972-1973: 3-5; Levin 1968: 94-96). There is, therefore, a need to understand not only the functions, methods, and problems encountered by these channels' members at various levels of distribution but also, and more importantly, the profile of their target market to enable formulation of more effective distribution strategies.

This study, therefore, attempted to develop measures for the construction of an in-depth profile of non-program contraceptive users/buyers.[2] It also attempted to determine significant differences between the non-program users/buyers, program users/buyers, and non-acceptors, for the purpose of improving the marketing of contraceptives in the private sector.

THEORETICAL BACKGROUND

This section discusses the concept of marketing in general, social marketing in particular, market segmentation, and the application of marketing concepts to FP.

The Marketing Concept

Marketing may be viewed as a human activity directed at satisfying needs and wants through exchange processes (Kotler 1980: 19). It involves assessing and analyzing the needs, wants, perceptions, and preferences of actual and potential buyers of a product or service and planning. It further involves implementing and controlling of programs to build and maintain mutually beneficial exchanges with target markets so as to achieve the objectives set by the marketer.

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[1]Private communication with the NFPB revealed that approximately half of the contraceptive acceptors obtain supplies from the private sector. Comparative figures in 1973 were more than 50 percent for Taiwan, more than 60 percent for Morocco, and more than 90 percent for Mexico (Nortman 1973).

[2]Despite the conceptual difference between "users" and "buyers," it has been found in the course of this research that for contraceptive products in Malaysia, they are usually one and the same person. Hence, both these terms may be used interchangeably.

The above concept of marketing covers three elements which are fundamental to the modern approach to marketing:

1. consumer orientation, which is manifested when a positive effort is made by the marketer to place the consumer at the focus of all his marketing decisions;
2. integrated marketing operations, which is achieved when all marketing functions are coordinated to effect the desired exchanges, thus enhancing total effectiveness of the marketing organization in meeting the wants of the market; and
3. reward-directed, i.e., when organizational objectives are met through simultaneous customer satisfaction in the market place (Jolson 1978: 87).

Of paramount importance in any attempt at marketing planning is the understanding of one's target market in terms of buyer characteristics. These generally refer to the buyers' demographic-socio-economic characteristics, their needs, wants, and motives which may be rational or psychological in nature, and their behavior, such as what, when, how, and where they buy (Kotler 1980; Lunn 1978: 79–101). Decisions on details of the product to be marketed, the price at which it is to be sold, the promotion that is to be employed to sell the product, and the places of distribution are made with buyers and potential buyers as the central foci so as to effect transactions that mutually satisfy buyers and the sellers. However, these marketing mix variables, commonly referred to as the four P's — product, price, promotion, and place — and which are controllable from the viewpoint of the marketer, can only be decided upon within the constraints of environmental factors which are given and uncontrollable. For instance, legal, political, religious, business, economic, technological, social, cultural, and other variables very often set the limits within which the marketing mix can be maneuvered (McCarthy 1968: 31–33).

Social Marketing

An offshoot of the modern concept of marketing, social marketing has been defined as the design, implementation, and control of programs calculated to influence the acceptability of social ideas and involving considerations of product planning, pricing, communication, distribution, and marketing research (Kotler and Zaltman 1971: 3–12). Despite the similarity between business and social marketing in that the marketer attempts to motivate potential buyers to accept his products, to maintain continuous purchase and usage, and to ensure overall satisfaction, important differences may be seen between the two types of marketing. First, the financial goals of business marketing are replaced by social objectives of social marketing. Second, social marketing has to go beyond buyers' preferences, tastes, and values sufficient for business marketing as it also involves deep-seated beliefs, attitudes, and traditional values. Moreover, very often social marketing may face legal constraints and may involve highly sensitive moral, religious, and even political issues generally uncommon in business marketing. Furthermore, by virtue of the fact that social marketing may depend on less pecuniarily motivated methods, e.g., using volunteers as distributing agents, implementation of marketing strategies may not be as effective as in the case of outright business marketing. In addition, the costs of promoting social causes and the seeming disruption of personal values and social systems may be resented in the case of social marketing while business marketing generally tries to avoid antagonizing buyers. Nevertheless, the increasing importance of social marketing is testified to by the fact that more and more non-business institutions have been applying marketing concepts and techniques to promote and further their social causes (Zaltman 1971; Roberto 1972: 33–51).

Market Segmentation

A very important marketing strategy which has proved successful in recent years is market segmentation. Based on market orientation, it involves dividing the present and potential buyers into relatively homogeneous segments in terms of one or more

significant aspects for the purpose of selecting a segment or segments as the target market. Marketing activities may then be directed to the chosen segment(s) instead of attempting to grapple with a heterogeneous, albeit bigger, total market. The advantages of market segmentation include not only greater sales resulting from strategies specially geared towards the target segment(s) but also greater cost efficiency by virtue of the fact that much of the marketing effort wasted on a broad, diffused market may be saved by activities sharply tailored to selected segments, particularly those which are currently not highly satisfied (Bieda and Kassarjian 1978: 144–151; Johnson 1971: 13–18).

The crucial question for any attempt at segmentation is the selection of a suitable criterion (or criteria) as the basis for segmenting the market. A wealth of literature discusses the various possible bases for segmentation as well as the conditions which must be fulfilled for effectiveness. Traditionally, demographic-socio-economic characteristics such as age, income, education, race, etc., have been widely used for segmentation. They have gradually been supplemented or replaced by unconventional criteria as more marketing research is carried out. For instance, geographic variables such as region, density, climate, etc., psychographic variables such as social class, lifestyle, personality, etc., or behavioristic variables such as purchase occasion, benefits sought, usage rate, user status, buyer readiness stage, loyalty status, and marketing-factor sensitivity have also been used. According to Kotler, the usefulness of segmenting a market along any particular dimension depends on whether or not the segments are measurable, accessible, and large enough to warrant separate marketing activity (Kotler 1980: 294–309; Yankelovich 1964: 23–90). Many writers have supported these conditions and regarded them as fundamental requirements for effective segmentation.

Application of Marketing Concepts to Family Planning

The commercial selling of contraceptive products is by no means new. This section attempts to review very briefly, the general application of social marketing in the field of FP and the specific use of market segmentation as a strategy in such projects both internationally and in Malaysia.

One of the oldest social marketing projects is the famous Nirodh program of India, which began actual sale of condoms in 1969 (Jain 1973: 184–190). In fact, as far back as 1963, a marketing plan had been drawn up for the purpose of promoting FP in India (Indian Institute of Management 1965: 7–12). Following this, Sri Lanka launched its Preethi condom and Colombia its Tahiti and Prime projects in 1973 (Davies and Louis 1979: 46–56; Hapugalle 1977: 293–317; Trias and Ojeda 1978). By 1975, Thailand, Bangladesh, Jamaica, Kenya, South Korea, and others had joined in selling either condoms, oral contraceptives, or both through commercial distributors and with various kinds of promotional activities. In the last couple of years, Nepal and El Salvador have also commenced their marketing of condoms and oral conraceptives while Egypt, Ghana, and Mexico sell spermicides as well — all under the banner of social marketing (Ciszewski 1977: 277–292; Black and Harvey 1976: 101–108; John Hopkins University 1980).

The extent to which social marketing is furthering the cause of FP and achieving the goals of increasing contraceptive use may be seen from the following extract from a recent report published by John Hopkins University.

> Experience from more than 30 social marketing projects in 27 countries suggests that this combination (of marketing mix variables) can work. At least half a dozen projects with three years' experience or more have improved contraceptive availability, increased sales of contraceptive products, spread knowledge of and stimulated wider use of the methods promoted, and provided a substantial measure of protection against unwanted pregnancy at a cost below that of most other programs. (John Hopkins University 1980: 1)

Despite the apparent relevance of social marketing and, particularly, the possible central role of marketing segmentation for implementing FP programs, the amount of research on marketing segmentation has been negligible. To this writer's knowledge only three studies have suggested how this strategy could be applied to FP. Schramm has suggested that the market for contraceptive products could be segmented according to the different stages of readiness of potential buyers (1971). Roberto proposes another scheme for segmentation based on the "parity and age of mother" (1972: 33-51). Lastly, Simon uses "method and readiness for regulation" as his criteria for a segmentation strategy (1974: 90-97).

Aside from the paucity of studies exploring the possibility of applying marketing segmentation strategies to FP programs, the above schemes have apparently remained only idealized segmentation plans. There are no reports on the application of these schemes known to this writer. Also, it is important to note that the above proposed schemes for segmentation are based primarily on demographic characteristics, i.e., age, parity, readiness to regulate, and perhaps on only one aspect of contraceptive practice (method used). Other seemingly important differentiating characteristics such as socio-economic characteristics, knowledge-attitude-practice characteristics, marketing mix variables, etc., have not been taken into consideration.

In the case of Malaysia, it is generally felt that commercial marketing and market research techniques may be worth attempting in order to supplement the programs being carried out by the public and volunteer sectors. Moreover, the NFPB is interested in marketing the idea of FP itself. However, up to now hardly any positive steps in using social marketing can be seen, let alone the application of market segmentation. The commercial marketing of contraceptives by the private sector has been confined to supplying and distributing contraceptive products as one of its many medical lines. Marketing activities for contraceptive products are by and large similar to those of other drugs where a traditional product and/or sales-oriented approach rather than customer orientation is followed.

In terms of research, the voluntary sector's Federation of Family Planning Association of Malaysia (FFPA) attempted to survey basic characteristics both of outlets retailing contraceptive products and of customers patronizing these outlets in the urban areas. Unfortunately their attempt in the mid-seventies failed after obtaining a set of incomplete and non-usable questionnaires.[3] To date, the only piece of work on commercial marketing concerns that of oral contraceptives in Malaysia conducted by the University of Malaya. However, the study was conducted on a very small scale and was restricted to the marketing practices in terms of the four P's of the importers/distributors with special reference to the most important supplier. Buyer characteristics remained unexamined (Lim 1979/80). Again, the absence of research in the non-program, private sector distribution of FP products in Malaysia noted in the opening paragraphs of this report cannot be overemphasized. The present study will hopefully set the ball rolling in this relatively unknown but promising sector.

THE PRESENT STUDY

The study's hypothesis, survey sample, dependent and independent variables, and the methods of analysis used are discussed in this section.

Hypothesis

Recognizing the wide scope of research in the application of social marketing, especially in the use of segmentation for FP programs, this study focuses on the buyers themselves,

[3]Private communication with FFPA.

following the dictates of modern marketing logic. Based on the theoretical discussion and as a result of the lack of knowledge about contraceptive distribution in Malaysia, the main hypothesis of the present research has been posited as follows:

> The source of contraceptive supply is a significant and usable basis for segmenting the market for contraceptive methods in Malaysia.

On the basis of the criterion "source of contraceptive supply," the heterogeneous market for contraceptives can be divided into four main segments, namely, the ever user program segment, the ever user non-program segment, the ever user program/non-program segment, i.e., ever users who switch between program and non-program sources, and the never user segment. In other words, segments may be formed with respect to whether or not buyers or potential buyers have ever used contraceptive methods and whether or not they have ever obtained supplies from program sources, i.e., from the public or volunteer sectors, from non-program sources, i.e., the private sector, from both program and non-program sources, or from neither. In the present study the source of contraceptive supplies or buying behavior in terms of where a product is purchased was employed as a criterion for market segmentation for several reasons. First, it was a criterion which was promising but yet unused and untested. Second, it would enable a study of non-program users and non-users, which are undoubtedly the least known segments of the market. Third, it had high probabilities of turning out segments which were substantial, measurable, and accessible. Fourth, the criterion had possibilities of pinpointing potential areas, not only for implementation of marketing tools, but also for reducing fertility. Finally, in view of the gap between knowledge and practice of FP in Malaysia, it was thought that this criterion might indicate where the gap occurs and how it might be narrowed.[4]

From an operational point of view, this research was designed to see if significant differences existed between the segments in terms of source of contraceptive supply. If they did, what were the areas of differences and the relative importance of these areas in differentiating between the segments? Answering these questions would enable the construction of a profile of the segment for whom marketing techniques would be suitable.

Survey Sample

Data for the research were gathered in Kuala Lumpur (specificially the Federal Territory of Malaysia) in March, April, and May of 1980. The area was selected on the grounds that private sector distribution of contraceptives caters mainly to the urban rather than the rural populace. Besides, the Federal Territory includes some rural and urban-rural districts as officially defined, despite the fact that it is primarily urban in character.

Personal interviews were conducted using a structured questionnaire to survey 338 eligible respondents. These respondents were found within a sample of households selected by a two-stage cluster sampling using the equal probability of selection of element method. To obtain an overall probabilistic sample of 0.3 percent of households in the Federal Territory, sampling fractions of 2.8 percent of clusters and 10.7 percent of households in each selected cluster were used for the two stages respectively. Findings of the research in proportionate terms will, therefore, similarly apply to the population.

A fertile couple was eligible for inclusion in the sample if they were living together as man and wife, and if the female was of childbearing age, between 15 and 49, and was willing to cooperate with the research. As the sampling unit was the "couple" and not the "housewife," interviews were conducted with either the male or the female

[4]In view of the exploratory nature of this study as exemplified by the experimental manner in choosing a wide range of independent variables and the liberal criteria for discriminant analysis, it was decided that the discriminant function coefficients themselves shall not be presented along with the findings.

depending on who the user/buyer was. In cases where the user and the buyer were two persons within the eligible unit, both were interviewed using different questions which pertained to the user and the buyer respectively. However, the user who did not buy the products himself or herself occurred rarely in the sample. In almost every case surveyed, interviewees were able to answer most if not all the questions even if they themselves were not the actual users or buyers, e.g., wives were able to provide satisfactory answers even if contraceptive devices for males were used. As oral contraception was the most popular method, the majority of the interviewees were females who normally purchased the products themselves.

In cases of households with more than one eligible couple, e.g., when two or more married brothers shared a household or when two wives of the same husband lived under the same roof, each and every potential childbearing couple was interviewed and counted as a separate eligible unit. The total number of eligible respondents was, therefore, bigger than that of households sampled. However, the incidence of households with multiple eligible couples was insignificant.

Dependent and Independent Variables

The dependent variables corresponded to the four groups of buyers and potential buyers described earlier as the four market segments distinguished on the basis of buyers' or users' source of contraceptive supply. It was hypothesized that the four-group classification scheme would be of significant value to managers of FP programs who wished to embark on social marketing, especially if persons ever using contraceptives obtained only from non-program sources are found to have attributes which significantly differentiate them from persons who obtained their supplies solely from program sources or from both program and non-program sources. In such a case differences may be usefully incorporated into promotional, distribution, and commercial efforts aimed at attracting the non-program user segment.

Respondents were classified into the ever-user, program segment if they indicated that supplies were usually obtained from NFPB clinics, FPA clinics, or government hospitals and clinics in the public and voluntary sectors. They fell into the ever-user, non-program segment if they indicated as their usual supply source private hospitals/clinics, pharmacies/chemists/drugstores, Chinese medical shops, "Indian" newsstands or variety stores, and othe retail or personal service outlets such as barbershops, sundry shops, etc., which operate in the private sector. The third segment consisted of persons who had ever used FP methods and had patronized *both* public (including voluntary) and private sector programs at one time or another. They constituted the "switchers" group. Finally, the last segment was composed of persons who had never before used and were not currently using any method of contraception.

The independent variables for this research were categorized into three main types. They included 31 socio-economic variables, 35 KAP (knowledge, attitude, and practice of FP) variables, and 154 marketing variables. The marketing variables were further divided into seven sub-categories to give 17 approval of contraceptive-distribution-outlet variables, 25 factors affecting choice of distribution-outlet variables, 32 promotion variables, 20 price and purchase variables, 21 product-brand-pack variables, seven motivator variables, and 32 general shopping and social activities variables.

Methods of Analysis

Two methods of statistical analysis were used in this study. First, univariate F-tests were conducted to search for differences among means of the four groups on each independent variable. Second, because the four groups or possible segments comprised a mutually exclusive and exhaustive set of nominal dependent variables, discriminant analysis, a multivariate technique, was used to develop several multivariable functions (of variables)

which would serve to differentiate to a maximum degree among those groups. The two statistical procedures were both required because the type of data used in this study was inherently multicollinear or inter-related. Since multicollinearity can sometimes influence the entry of variables into the discriminant functions, some variables which do not genuinely differentiate among groups may enter while others which are valid discriminators may be prevented from entering. Thus, it was felt useful to first examine the univariate differences among the means of the four groups with respect to each independent variable via the F-test, before using the discriminant analysis multivariate procedure. These two methods together in sequence provided a way of assessing, to some extent, the possible confounding effects from multicollinearity. More importantly, they constituted tests that would prove or disapprove the existence of distinct differences among the groups. Further, from the more powerful discrimination functions the most significant independent variables in terms of ability to discriminate among the groups could be discerned and highlighted for the construction of market target profiles. In other words, the profile of non-program users may be constructed on the basis of variables that differentiate this segment most from others according to the results of the F-test and the discriminant analysis.

For both univariate and multivariate tests, the Statistical Package for Social Sciences was employed to run each of the nine sets of the independent variables, i.e., socio-economic, KAP, and seven sets of marketing variables, against the dependent variable, i.e., source of contraceptive supply. For the discriminant analysis, a stepwise procedure was used to enter independent variables according to Rao's V.[5] Further, the ability of the discriminant functions to predict and classify members of the four groups or segments was also examined for each of the nine sets of independent variables by comparing the predicted group membership and the actual group membership of the cases involved in the analysis.

FINDINGS

The results of the analyses are presented in the following nine sections according to the sets of independent or profile variables employed. In each section, the univariate F-test findings for only variables exhibiting significance at a probability less than or equal to 0.05 are discussed before the multivariate findings are presented.

Socio-Economic Differences

Table 1 shows that the univariate F-tests yield several interesting observations. First, among the ever users of contraceptive methods, it was found that those who obtained their supplies solely from non-program sources were more dependent on others such as spouse, relative, friend, etc., to procure or buy the products (rather than obtaining the products themselves) when compared to ever users obtaining supplies from program sources or those obtaining such products from both program and non-program sources. Second, non-program users or their buyers, were found to travel the farthest distance from home or workplace using more expensive means of transport (by car, bus, or taxi) in comparison with program users and "switchers" who travel shorter distances either on foot or by bicycle. Third, non-program users were more likely to be non-Malay and non-Muslim, and to have fewer children than the other two groups. Moreover, they

[5]This statistic is a generalized distance measure which selects the independent variable that contributes the largest increase in V when added to the variables already entered. The Rao criterion provides the greatest overall separation of the groups. Specifically, the amount of V that has changed at each step and a test of significance for the change in V indicate the relative importance of independent variables entered in the analysis. The relative ability of each discriminant function to separate the groups, i.e., the discriminating power of variables (entered) in a function, is denoted by the eigenvalue and its associated canonical correlation and, further, by the change in Wilks' lambda and its associated chi-square test of statistical significance. Generally, the larger the eigenvalue and the canonical correlation are, the greater is the ability of a function to separate the groups and the smaller the value of Wilks' lambda, the more discriminating power is present.

TABLE 1
F-test: Significantly Differentiating Socio-Economic Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 98)	Group 2 Ever User Non-program Source (n = 49)	Group 3 Ever User Both Sources (n = 39)	Group 4 Never User (n = 91)
V2 Buyer of products	128.2	1.04	1.35	1.13	0.11
V3 Transport of buyer	75.3	2.66	2.71	2.64	0.18
V4 Distance travelled from home or work	95.8	1.64	1.82	1.67	0.10
V7 Race of male	5.2	1.37	1.55	1.69	1.40
V8 Race of female	4.9	1.38	1.55	1.69	1.40
V9 Religion of male	5.7	1.36	1.55	1.69	1.38
V10 Religion of female	5.7	1.36	1.55	1.69	1.38
V13 Education of male	4.1	4.48	5.00	4.69	4.08
V14 Education of female	6.4	3.88	4.35	4.21	3.34
V15 Occupation of male	3.0	6.71	7.47	6.87	6.51
V16 Occupation of female	5.4	2.82	3.98	3.74	2.09
V17 Monthly income of male	6.9	3.08	4.02	3.64	3.01
V18 Monthly income of female	8.6	0.92	1.73	1.67	0.45
V19 Monthly income of household	7.2	3.47	4.35	3.82	3.16
V21 Length of stay in neighborhood	3.6	2.87	3.31	3.36	2.70
V22B No. of daughters	3.6	1.59	1.27	1.21	0.99
V22 Total no. of children	3.0	3.09	2.71	2.74	2.27

appear to have been drawn from higher occupational levels, to have higher individual and household incomes, and to have more years of formal education, be they male or female.

On the other hand, program users more likely obtained their own supplies and travelled the shortest distance to their source of supply. They were also more likely to be Malay, Muslim, and with a larger family size, and they had lower occupational statuses, lower incomes, and fewer years of schooling.

Further, Table 1 also distinctly shows that never users, on the average, had the least education and the lowest occupational levels and incomes. They also had been staying in their respective neighborhoods for the shortest length of time. Finally, this group had the least number of children.

It may be important to note that age and sex do not feature as significant variables in the above tests.

As shown in Table 2, only 13 of the 31 socio-economic variables were found to be significant in the multivariate discriminant functions as compared to 17 in the univariate F-tests. Thus, some degree of multicollinearity may have affected the entry of certain discriminating variables. However, the possible confounding effects could not have been large since ten of the variables were significant in both the univariate and multivariate tests. The relative importance of variables entered at each step in differentiating between the groups are summarized by Wilks' lambda and change in V and their significance tests (see Table 2). Most of the variables contained in the discriminant functions have been discussed in a univariate context with the exception of the average age difference of children. Among the three categories of users, the children of non-program users were found to have the largest average age difference between them.

Clearly, the 13 socio-economic variables produce a very high degree of separation especially along the first discriminant function, as indicated by the high eigenvalue (2.12) and canonical correlation (0.82), as well as by the small value of Wilks' lambda (0.26) and its significant chi-square (360.19). In other words, socio-economic differences such as those expressed by variables included in the discriminant functions may be employed as measures to segment the contraceptive product market by users' source of supply.

That the discriminant functions provided a high degree of success in separating the four groups or segments is further shown in Table 3. Clearly, 67 percent of the cases analyzed were correctly identified as members of the groups to which they actually belonged. It is important to note that the discriminant functions based on socio-economic variables were better at separating the never users from the ever users than they were at separating between the three groups of users, i.e., program users, non-program users, and the "switchers."

Knowledge, Attitude and Practice of Family Planning Differences

Table 4 shows that never users can be easily distinguished from ever users by their knowledge, attitude, and practice of FP. Never users were relatively least aware of FP, despite the generally high level of knowledge among respondents. They also showed the lowest degree of approval towards FP and were the least willing to practice it when compared with the ever users. Never users were able to provide the most number of reasons for not using birth control. They also found the least number of reasons to justify birth control practice. Moreover, it is not surprising to find that, relative to ever users, they had the strongest disapproval of specific methods of FP with the exception of the rhythm method. With respect to the places known for obtaining the various FP products, never users knew the least number of sources for all the methods considered except for sterilization.

Among the first three groups of ever users, non-program users exhibited some interesting characteristics which may have important implications for managers of FP

TABLE 2
Discriminant Analysis: Socio-Economic Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V2		1	.415223	.0000	.3845 + 003	.0000	.3345 + 003	.0000	Buyer of products
2	V4		2	.351013	.0000	.4963 + 003	.0000	.1118 + 003	.0000	Distance travelled from home or work
3	V25		3	.339621	.0000	.5186 + 003	.0000	.2225 + 002	.0001	Average age difference of children
4	V3		4	.329100	.0000	.5361 + 003	.0000	.1754 + 002	.0005	Transport of buyer
5	V9		5	.312956	.0000	.5527 + 003	.0000	.1659 + 002	.0009	Religion of male
6	V21		6	.304277	.0000	.5669 + 003	.0000	.1425 + 002	.0026	Length of stay in neighborhood
7	V13		7	.295641	.0000	.5847 + 003	.0000	.1779 + 002	.0005	Education of male
8	V17		8	.286139	.0000	.5951 + 003	.0000	.1040 + 002	.0155	Monthly income of male
9	V23B		9	.281691	.0000	.6043 + 003	.0000	.9234 + 001	.0263	Ideal no. of daughters
10	V23		10	.275323	.0000	.6147 + 003	.0000	.1038 + 002	.0156	Ideal total no. of children
11	V22B		11	.270204	.0000	.6220 + 003	.0000	.7301 + 001	.0629	No. of daughters
12	V19		12	.264489	.0000	.6306 + 003	.0000	.8541 + 001	.0361	Monthly income of household
13	V16		13	.260151	.0000	.6390 + 003	.0000	.8465 + 001	.0373	Occupation of female

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.2601509	360.19	39	.0000
1*	2.11682	90.43	90.43	.8241119	1	.8108441	56.089	24	.0002
2*	.16854	7.20	97.63	.3797820	2	.9475073	14.424	11	.2104
3*	.05540	2.37	100.00	.2291130					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

TABLE 3
Cross Validation of Discriminant Functions: Socio-Economic Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	100	57	18	21	4
		57.0%	18.0%	21.0%	4.0%
Group 2	51	10	26	14	1
		19.6%	51.0%	27.5%	2.0%
Group 3	40	12	9	19	0
		30.0%	22.5%	47.5%	.0%
Group 4	93	3	2	1	87
		3.2%	2.2%	1.1%	93.5%

Percentage of 'grouped' cases correctly classified: 66.55%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
53 cases had at least one missing discriminating variable.
284 cases were used for printed output.

programs in either the public or private sector. First, non-program users were found to have not only the highest level of awareness of FP but they also knew twice as many methods as program users and nearly four times as many methods as the "switchers." Second, they were twice as willing to practice FP as program users, despite the finding that the same group of non-program users indicated less approval for FP than the other two groups of users. Third, relative to program users and "switchers" it was found that non-program users were able to give twice (or more) as many reasons for practicing FP and only half (or less) as many reasons for not using FP. Fourth, non-program users approved of the specific methods less than the program users but more than the "switchers" with two exceptions. They had the most favorable attitude towards "other female methods" and the most unfavorable attitude towards the pill. Fifth, relative to the other two groups of users, non-program users knew the least number of places for obtaining FP products. They also had the least experience in patronizing these places.

The above findings clearly indicate that despite the fact that non-program users have the best knowledge of, the most reasons for, and the most willingness to practice FP in general, they tended to be relatively "weak" in their knowledge of places for obtaining the specific FP products and lacked experience in patronizing these places. Together with the findings that non-program users come from higher social strata, the KAP findings imply that the present distribution of contraceptives by the non-program sector leaves substantial room for improvement. Steps taken in this direction may prove useful in bridging the existing gap between knowledge of FP and its practice.

Table 5 indicates that 24 of the 35 KAP variables are included as significant discriminating variables among the four groups. Only one variable found significant in the univariate tests is excluded in the multivariate functions, hence, the insignificance of multicollinearity. But, six variables are included as important discriminants though previously found to be insignificant in the F-tests. These variables are: places (sources) known for the pill, places (sources) known for condom, approval of abstinence, approval of other methods, number of methods ever used, and approval of withdrawal. It is interesting to find that when considered together with the effects of other variables, non-program users were found to know the greatest number of places for procuring the pill

TABLE 4
F-test: Significantly Differentiating KAP Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables: Group 1 Ever User Program Source (n = 104)	Group 2 Ever User Non-program Source (n = 25)	Group 3 Ever User Both Sources (n = 153)	Group 4 Never User (n = 52)
V26 Ever heard of FP	4.2	1.01	1.00	1.01	1.08
V27 Opinion of FP	14.7	1.45	1.56	1.41	2.62
V28 Willingness to practice FP	29.2	0.38	0.16	0.16	1.06
V29 No. of methods ever heard of	19.3	2.57	6.12	1.67	5.31
V31 Methods currently using	13.9	2.89	1.76	3.00	0.77
V32 Reasons for ever using	17.6	0.93	1.84	0.65	0.35
V33 Reasons for never using	4.8	0.63	0.36	0.74	0.98
V34 Approve of using pill	8.1	2.23	2.52	2.27	3.62
V35 Approve of using IUD	3.8	4.46	4.08	3.83	4.79
V37 Approve of using other female methods	4.5	5.38	4.56	4.69	5.48
V38 Approve of using condom	6.9	4.15	3.52	3.11	4.15
V39 Approve of using rhythm	3.8	4.15	3.60	3.31	4.06
V42 Approve of using sterilization	7.8	4.51	4.00	3.39	4.60
V43 Approve of using vasectomy	8.3	5.28	4.72	3.97	4.83
V46 Places known for IUD	31.9	3.18	2.20	3.73	1.56
V47 Places known for injection	14.2	2.15	2.08	3.16	1.69
V48 Places known for other female methods	22.9	2.24	1.64	3.01	0.94
V50 Places known for sterilization	14.5	1.86	1.12	2.37	1.27
V51 Places known for vasectomy	23.9	1.84	1.04	2.59	1.02
V52 Places known for other methods	40.7	1.23	0.56	2.46	0.27
V53 Places ever obtained pill	81.1	1.02	0.84	2.56	0.00
V54 Places ever obtained IUD	50.1	0.92	0.04	1.82	0.00
V55 Places ever obtained injection	32.5	0.63	0.08	1.54	0.00
V56 Places ever obtained other female methods	30.0	0.52	0.00	1.59	0.00
V57 Places ever obtained condom	67.1	0.59	0.60	2.71	0.00
V58 Places ever obtained sterilization	28.2	0.55	0.04	1.34	0.00
V59 Places ever obtained vasectomy	38.7	0.44	0.04	1.48	0.00
V60 Places ever obtained other methods	17.6	0.20	0.04	0.82	0.00

TABLE 5 Discriminant Analysis: KAP Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V53		1	.575691	.0000	.2432 + 003	.0000	.2432 + 003	.0000	Places ever obtained pill
2	V52		2	.499068	.0000	.3292 + 003	.0000	.8602 + 002	.0000	Places known for other methods
3	V28		3	.427645	.0000	.4103 + 003	.0000	.8107 + 002	.0000	Willingness to practice FP
4	V45		4	.400097	.0000	.4566 + 003	.0000	.4632 + 002	.0000	Places known for pill
5	V46		5	.355261	.0000	.5274 + 003	.0000	.7071 + 002	.0000	Places known for IUD
6	V32		6	.314506	.0000	.5764 + 003	.0000	.4904 + 002	.0000	Reasons for ever using
7	V57		7	.293851	.0000	.6124 + 003	.0000	.3605 + 002	.0000	Places ever obtained condom
8	V58		8	.275415	.0000	.6518 + 003	.0000	.3931 + 002	.0000	Places ever obtained sterilization
9	V49		9	.263444	.0000	.6814 + 003	.0000	.2964 + 002	.0000	Places known for condom
10		V52	8	.265727	.0000	.6738 + 003	.0000	-.7573 + 001	.0557	Places known for other methods
11	V43		9	.253228	.0000	.7055 + 003	.0000	.3165 + 002	.0000	Approve of using vasectomy
12	V27		10	.243673	.0000	.7258 + 003	.0000	.2035 + 002	.0001	Opinion of FP
13	V33		11	.234405	.0000	.7438 + 003	.0000	.1798 + 002	.0004	Reasons for never using
14	V29		12	.226755	.0000	.7638 + 003	.0000	.2005 + 002	.0002	No. of methods ever heard of
15	V59		13	.221841	.0000	.7800 + 003	.0000	.1617 + 002	.0010	Places ever obtained vasectomy
16	V60		14	.212138	.0000	.8212 + 003	.0000	.4122 + 002	.0000	Places ever obtained other methods
17	V54		15	.204787	.0000	.8397 + 003	.0000	.1847 + 002	.0004	Places ever obtained IUD
18	V41		16	.201479	.0000	.8506 + 003	.0000	.1090 + 002	.0123	Approve of using abstinence
19	V44		17	.196267	.0000	.8628 + 003	.0000	.1218 + 002	.0068	Approve of using other methods
20	V37		18	.193766	.0000	.8744 + 003	.0000	.1159 + 002	.0089	Approve of using other female methods
21	V31		19	.191622	.0000	.8830 + 003	.0000	.8577 + 001	.0355	Methods currently using
22	V30		20	.189334	.0000	.8906 + 003	.0000	.7635 + 001	.0542	No. of methods ever used
23	V56		21	.187404	.0000	.8965 + 003	.0000	.5921 + 001	.1155	Places ever obtained other female methods
24	V40		22	.185468	.0000	.9031 + 003	.0000	.6556 + 001	.0875	Approve of using withdrawal
25	V38		23	.183535	.0000	.9092 + 003	.0000	.6176 + 001	.1034	Approve of using condom
26		V31	22	.185062	.0000	.9030 + 003	.0000	-.6257 + 001	.0998	Methods currently using
27	V50		23	.182697	.0000	.9083 + 003	.0000	.5322 + 001	.1497	Places known for sterilization
28	V47		24	.180452	.0000	.9162 + 003	.0000	.7847 + 001	.0493	Places known for injection

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.1804523	546.22	72	.0000
1*	2.07003	74.56	74.56	.8211399	1	.5539945	188.40	46	.0000
2*	.51373	18.50	93.07	.5825644	2	.8385995	56.151	22	.0001
3*	.19246	6.93	100.00	.4017468					

and the condom. Across groups they were found to most strongly disapprove of using abstinence and to most weakly disapprove of using withdrawal. Further, they had used the most number of methods when compared to the other groups. These results may appear contrary to those obtained from the univariate tests. Nevertheless, the variables that are included in the discriminant functions together produce significant differences among the four groups of respondents. The eigenvalue for the first function (2.07) (with canonical correlation of 0.82) together with the very small, significant value of Wilks' lambda (0.18) testify to the strength of its discriminating power.

That the functions are able to separate the never users and the non-program users from the program user and "switcher" groups almost equally well is evident from Table 6. Overall, the KAP variables when used in discriminant analysis were able to provide a 76 percent correct classification of the cases. Compared to the corresponding 67 percent for socio-economic variables, this finding shows that KAP variables cannot be taken lightly in attempts to segment the contraceptive market into users' source groups.

TABLE 6
Cross Validation of Discriminant Functions: KAP Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	104	72	22	6	4
		69.2%	21.2%	5.8%	3.8%
Group 2	25	3	21	0	1
		12.0%	84.0%	.0%	4.0%
Group 3	153	24	11	117	1
		15.7%	7.2%	76.5%	.7%
Group 4	52	4	4	0	44
		7.7%	7.7%	.0%	84.6%

Percentage of 'grouped' cases correctly classified: 76.05%.
Classification processing summary:
338 cases were processed.
4 cases were excluded for missing or out-of-range group codes.
334 cases were used for printed output.

Contraceptive Distribution Outlet Approval Differences

Table 7 shows that preferences for various outlet types can be employed to show significant univariate differences between the never users and the users. Clearly, never users had the lowest degree of approval or conversely the highest degree of disapproval for every source of supply which conventionally sells or provides contraceptive products in both the private and public sectors. This was expected. Among the three ever user groups, however, non-program users tended to approve of medical and paramedical sources of supply more strongly than the other two groups. But, non-users least approved of government hospitals and clinics. On the other hand, the "switchers," who at times patronized program sources and at times patronized non-program sources, found unconventional sources such as barber shops, sundry shops, post offices, pubs/bars, mail order, and markets more acceptable than the program and non-program users. Across groups program users were found to most strongly disapprove of almost every type of private sector outlet except for private hospitals and clinics. They also expressed the strongest disapproval of voluntary sector suppliers such as clinics of the Family Planning

TABLE 7
F-test: Significantly Differentiating Approval of Contraceptive Distribution Outlet Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 104)	Group 2 Ever User Non-program Source (n = 25)	Group 3 Ever User Both Sources (n = 153)	Group 4 Never User (n = 52)
V61 Approve of supply from NFPB	8.1	1.33	1.28	1.35	2.35
V62 Approve of supply from FPA	5.7	1.49	1.36	1.39	2.35
V63 Approve of supply from GHC	8.6	1.24	1.28	1.25	2.21
V64 Approve of supply from PHC	5.2	1.45	1.36	1.71	2.37
V65 Approve of supply from PCD	7.4	3.24	2.16	2.67	3.85
V66 Approve of supply from CMS	5.8	4.04	2.76	3.53	4.38
V67 Approve of supply from INS	6.1	5.47	5.00	4.92	5.75
V68 Approve of supply from barber shop	5.7	5.85	5.80	5.42	5.88
V69 Approve of supply from sundry shop	6.9	5.85	5.56	5.19	5.75
V70 Approve of supply from post office	5.8	5.85	5.72	5.28	5.71
V71 Approve of supply from pubs/bars	5.7	5.97	5.96	5.60	5.94
V72 Approve of supply from mail order	6.5	5.67	5.60	5.07	5.75
V73 Approve of supply from market	4.5	5.88	5.92	5.49	5.85
V75 Approve of supply from other place 1	5.7	7.00	7.00	7.00	6.94
V76 Approve of supply from other place 2	2.9	7.00	7.00	7.00	6.83
V77 Approve of supply from other place 3	2.9	7.00	7.00	7.00	6.83

Association. As expected, they constituted the keenest supporters of government hospitals and clinics.

By recalling earlier findings on socio-economic and KAP differences, preferences exhibited for the various outlet types may be partly explained by the fact that non-program users being better educated, more knowledgeable, and with higher income were more willing and able to make use of costly medical services in either the private or public sector. On the other hand, program users who were generally less educated, less knowledgeable, and with lower incomes were less willing and able to afford the facilities of the private sector. Government hospitals and clinics which are relatively inexpensive were usually preferred. The "switcher" group, with characteristics between program and non-program users, tended to be most liberal towards unconventional outlets.

From Table 8, it is seen that only 9 of the 17 approval of distribution outlet variables are included as significant discriminating variables among the four groups. All the variables except approval of supply from vending machines have been discussed in a univariate context. As in the case of other sources, the "switchers" showed the least disapproval of vending machines compared to the other groups (although their mean value indicates that they cannot be regarded as approvers of this source).

The discriminant functions based on this set of variables are certainly not as strong as in the previous two sets, either in terms of the eigenvalue, canonical correlation coefficient, Wilks' lambda, or chi-square. However, from the classification exercise (Table 9), it is interesting to note that the functions are able to separate out non-program users very efficiently from program users and "switchers." Moreover, they are also able to classify 45 percent of the cases into the groups to which they actually belonged.

Choice of Distribution Outlet Differences

Significant differences between factors that affect the choice of distribution outlets among the four groups are presented in Table 10. Despite the inexperience of the never users in procuring contraceptive products, they regarded each and every factor presented more importantly than the three user groups when asked to rank their importance of these factors on a six-point scale. Among the users, however, the following observations were noted. First, non-program users considered the following variables more important than the other two groups: anonymity, non-requirement of a prescription, ashamed to buy, speed, self-service, availability of a wide range of products, availability of a wide range of pharmaceuticals at the outlet, store layout and atmosphere, merchandise display, prestige of place, and shopping facilities available. Second, program users ranked variables such as easy access, suitability of the place (i.e., whether it is morally and socially acceptable), credit and billing policy, availability of a wide range of brands, merchandise quality, and preference for place more importantly than the non-program users and "switchers." Third, the "switcher" group placed more emphasis on convenience, ease of procurement, good sales service, economy, price, and proximity to home, than the other two groups.

Clearly, the above findings indicate that non-program users with higher incomes were more concerned with factors normally associated with urban and "middle-class" behavior, e.g., anonymity, non-requirment of a prescription, self-service, and characteristics expected of self-service outlets, e.g., wide range of goods, layout, display, and facilities. As expected, they did not rank factors associated with self-esteem and recognition by others as importantly as program users who were less affluent, nor did they consider variables of convenience, ease of procurement, location of outlet, price, and economy as importantly as the "switchers." In other words, non-program users were less sensitive to transactional-service-price-value variables (favored by "switchers") and quality-social-egoistic variables (favored by program users). Instead, they were more responsive to facilitative-speed-self-centered variables. Such differences in patronage

TABLE 8
Discriminant Analysis: Approval of Contraceptive Distribution Outlet Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V63		1	.927750	.0000	.2570 + 002	.0000	.2570 + 002	.0000	Approve of supply from GHC
2	V69		2	.876053	.0000	.4523 + 002	.0000	.1953 + 002	.0002	Approve of supply from sundry shop
3	V75		3	.839532	.0000	.6074 + 002	.0000	.1551 + 002	.0014	Approve of supply from other place 1
4	V65		4	.813114	.0000	.7209 + 002	.0000	.1135 + 002	.0100	Approve of supply from PCD
5	V64		5	.791747	.0000	.8156 + 002	.0000	.9472 + 001	.0236	Approve of supply from PHC
6	V76		6	.777520	.0000	.8843 + 002	.0000	.6870 + 001	.0762	Approve of supply from other place 2
7	V66		7	.766614	.0000	.9322 + 002	.0000	.4786 + 001	.1881	Approve of supply from CMS
8	V71		8	.756914	.0000	.9765 + 002	.0000	.4437 + 001	.2180	Approve of supply from pubs/bars
9	V74		9	.746025	.0000	.1030 + 003	.0000	.5374 + 001	.1464	Approve of supply from vending machine
10	V72		10	.732896	.0000	.1097 + 003	.0000	.6652 + 001	.0839	Approve of supply from mail order
11		V69	9	.739103	.0000	.1066 + 003	.0000	-.3035 + 001	.3862	Approve of supply from sundry shop

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.7391030	98.707	27	.0000
1*	.18699	57.86	57.86	.3969022	1	.8773062	42.739	16	.0003
2*	.09900	30.64	88.50	.3001389	2	.9641611	11.916	7	.1033
3*	.03717	11.50	100.00	.1893116					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

TABLE 9
Cross Validation of Discriminant Functions: Approval of Contraceptive Distribution Outlet Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	104	44	38	18	4
		42.3%	36.5%	17.3%	3.8%
Group 2	25	3	18	3	1
		12.0%	72.0%	12.0%	4.0%
Group 3	153	28	46	76	3
		18.3%	30.1%	49.7%	2.0%
Group 4	52	15	13	11	13
		28.8%	25.0%	21.2%	25.0%

Percentage of 'grouped' cases correctly classified: 45.21%.
Classification processing summary:
338 cases were processed.
4 cases were excluded for missing or out-of-range group codes.
334 cases were used for printed output.

motives have significant implications for segmentation and the marketing of contraceptive products.

The discriminant analysis procedure summarized in Table 11 selected 18 of the 25 factors that affect choice of distribution outlet as significant discriminating variables among the four groups. The only variable included in the discriminant functions which was insignificant in the F-tests was the distance between outlet and respondents' place of work. It was found that among users, the "switcher" group placed more importance on this variable than the other two groups. This was consistent with the "switchers' " emphasis on convenience and other transactional-service factors.

The usual measures of eigenvalue and Wilks' lambda showed that the discriminant variables permit a relatively high degree of separation between the groups of ever users and never users. In fact, as Table 12 shows, the classification procedure resulting from the discriminant functions indicates that the functions may be used to distinguish never users from ever users more readily than among the three ever user groups. However, among the ever users, the same functions can better distinguish "switchers" from program and non-program users than they can distinguish between the latter two groups. Nevertheless, the strength of the discriminating power of choice of outlet variables is substantial to the extent that 60 percent of the cases were correctly classified.

Promotion Differences

Table 13 shows that only 15 of the 32 promotion variables analyzed are significant univariately at 0.05 probability. It was indeed important to find that results from this set of variables confirm those found from previous sets of variables. First, never users attributed least importance to the various sources of FP communications, and they least approved of advertising the idea, methods, outlets, prices, etc., of FP products. Second, it is not surprising to find that among ever users, program users indicated doctors as their source of FP knowledge more than non-program and "switchers". Non-program users cited books as their information source more than the other two groups of users. Third, "switchers" were found to have the most liberal attitude towards the use of advertising on aspects and products of FP as shown in Table 13. This reinforces the earlier finding

TABLE 10
F-test: Significantly Differentiating Variables Affecting Choice of Distribution Outlet

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 65)	Group 2 Ever User Non-program Source (n = 49)	Group 3 Ever User Both Sources (n = 33)	Group 4 Never User (n = 89)
V78 Convenience	14.3	1.15	1.24	1.12	0.63
V79 Anonymity	27.3	3.78	3.61	4.58	1.65
V80 Easy to obtain from place	13.7	1.57	1.65	1.42	0.78
V81 Easy access	13.7	1.43	1.67	1.61	0.75
V82 No prescription	18.3	4.12	3.53	3.88	1.85
V83 Morally acceptable place	17.8	2.83	3.14	3.12	1.37
V84 Socially acceptable place	15.8	2.85	2.98	3.00	1.38
V85 Ashamed to buy	36.3	4.14	3.96	4.70	1.61
V86 Speed	11.9	2.48	2.08	2.21	1.12
V87 Good sales service	11.3	2.80	2.57	2.30	1.37
V88 Self-service	14.77	4.03	3.33	3.58	1.90
V89 Economy	10.4	2.45	2.06	1.97	1.09
V90 Price	9.1	2.54	2.41	2.10	1.20
V91 Credit & billing policy	16.4	4.11	4.51	4.42	2.31
V92 Wide range of products	10.4	3.71	3.31	3.58	2.08
V93 Wide range of pharmaceuticals	11.6	3.45	3.10	3.33	1.84
V94 Wide range of brands	7.7	3.09	3.18	3.15	1.88
V95 Store layout & atmosphere	18.9	3.72	3.37	3.91	1.82
V96 Merchandise display	23.2	3.83	3.33	4.09	1.76
V97 Merchandise quality	5.4	2.09	2.22	2.21	1.20
V98 Near home	11.4	1.77	2.31	1.33	0.94
V100 Prestige of place	22.7	4.14	3.92	4.33	1.94
V101 Preference for place	13.9	3.06	3.47	3.52	1.73
V102 Shopping facilities	8.8	3.54	3.27	3.58	2.02

TABLE 11

Discriminant Analysis Variables Affecting Choice of Distribution Outlet (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V85		1	.680871	.0000	.1087 + 003	.0000	.1087 + 003	.0000	Ashamed to buy
2	V98		2	.629200	.0000	.1278 + 003	.0000	.1906 + 002	.0003	Near home
3	V96		3	.591228	.0000	.1477 + 003	.0000	.1989 + 002	.0002	Merchandise display
4	V92		4	.556634	.0000	.1691 + 003	.0000	.2141 + 002	.0001	Wide range of products
5	V101		5	.531862	.0000	.1803 + 003	.0000	.1122 + 002	.0106	Preference for Place
6	V78		6	.518604	.0000	.1889 + 003	.0000	.8572 + 001	.0356	Convenience
7	V79		7	.503523	.0000	.1972 + 003	.0000	.8266 + 001	.0408	Anonymity
8	V88		8	.483721	.0000	.2086 + 003	.0000	.1148 + 002	.0094	Self-service
9	V82		9	.472824	.0000	.2164 + 003	.0000	.7765 + 001	.0511	No prescription
10	V99		10	.462162	.0000	.2242 + 003	.0000	.7848 + 001	.0492	Near work place
11	V95		11	.451517	.0000	.2331 + 003	.0000	.8846 + 001	.0314	Store layout & atmosphere
12	V81		12	.441381	.0000	.2414 + 003	.0000	.8264 + 001	.0409	Easy Access
13	V86		13	.426492	.0000	.2505 + 003	.0000	.9193 + 001	.0268	Speed
14	V80		14	.415880	.0000	.2573 + 003	.0000	.6715 + 001	.0815	Easy to obtain from place
15	V83		15	.409122	.0000	.2635 + 003	.0000	.6242 + 001	.1004	Morally acceptable place
16	V97		16	.400027	.0000	.2729 + 003	.0000	.9408 + 001	.0243	Merchandise quality
17	V91		17	.393167	.0000	.2781 + 003	.0000	.5238 + 001	.1552	Credit & billing policy
18	V90		18	.387081	.0000	.2835 + 003	.0000	.5352 + 001	.1478	Price
19		V86	17	.391383	.0000	.2801 + 003	.0000	−.3387 + 001	.3357	Speed
20		V78	16	.395495	.0000	.2770 + 003	.0000	−.3137 + 001	.3710	Convenience
21	V89		17	.389304	.0000	.2824 + 003	.0000	.5454 + 001	.1414	Economy
22	V84		18	.383133	.0000	.2874 + 003	.0000	.5002 + 001	.1717	Socially acceptable place

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.3831330	214.90	54	.0000
1*	.88430	71.38	71.38	.6850530	1	.7219358	72.983	34	.0001
2*	.20752	16.75	88.13	.4145515	2	.8717483	30.745	16	.0145
3*	.14712	11.87	100.00	.3581224					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

TABLE 12
Cross Validation of Discriminant Functions: Variables Affecting Choice of Distribution Outlet (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	68	38	10	10	10
		55.9%	14.7%	14.7%	14.7%
Group 2	50	10	28	8	4
		20.0%	56.0%	16.0%	8.0%
Group 3	33	1	5	15	2
		33.3%	15.2%	45.5%	6.1%
Group 4	90	11	10	5	64
		12.2%	11.1%	5.6%	71.1%

Percentage of 'grouped' cases correctly classified: 60.17%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
96 cases had at least one missing discriminating variable.
241 cases were used for printed output.

that they were most open to unconventional types of outlets for contraceptive products. Moreover, "switchers" were more approving of newspapers, television, and cinema as channels for FP communication. On the other hand, program users were the most conservative in that they least approved of using advertising for FP ideas, methods, products, outlets, etc., except for advertising the pill. Fourth, non-program users tended to more strongly approve of advertising methods for promoting FP in general, sale by putting up signs in shops, and sale by advice from paramedical personnel (nurse) than program users and "switchers." This was consistent with the non-program users' desires for facilities that helped them obtain contraceptive supplies. Fifth, again the earlier finding that non-program users reacted most unfavorably towards the pill was confirmed, as shown by the data in Table 13. Among users, non-program users least approved of advertising the pill specifically.

Table 14, which summarizes the step-wise discriminant analysis for promotion variables shows that only half of the variables considered were significant. Of these, only half have been discussed univariately. On examination, it is not surprising to find that non-program users regarded their spouses, friends, and "others" as more important sources of FP knowledge than the other two groups, while program users placed more emphasis on public lectures and talks, and "switchers," on exhibitions. Further, it is interesting to note that program users ranked the radio as a medium more highly suitable for promoting FP than the other users. This is not surprising in view of the fact that radio listeners generally come from lower-income groups. And, as expected, the sale of contraceptives by self-service found greatest approval from non-program users and least approval from program users.

Despite the above findings which are consistent with earlier analyses, the relatively small eigenvalues and large Wilks' lambdas for the discriminant functions, though not insignificant, must be reckoned with. Further research on the types of promotional variables to be included must be conducted for more conclusive results. Nevertheless, Table 15 shows that the functions may be effective in separating the never users from users and the "switchers" from the other user groups. Admittedly, they are poor in

TABLE 13
F-test: Significantly Differentiating Promotion Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 109)	Group 2 Ever User Non-program Source (n = 67)	Group 3 Ever User Both Sources (n = 48)	Group 4 Never User (n = 113)
V104 Know about FP from doctor	9.0	1.15	1.33	1.21	1.55
V106 Know about FP from books	3.8	1.79	1.58	1.65	1.86
V113 Approve of advertising idea of FP	11.7	1.78	1.73	1.27	2.68
V114 Approve of advertising method of FP	8.6	2.61	2.55	1.90	3.46
V115 Approve of advertising products for FP	6.9	2.62	2.51	2.40	3.59
V116 Approve of advertising pill	3.5	2.86	3.09	2.69	3.57
V118 Approve of advertising condom	3.7	4.11	3.66	3.44	4.41
V119 Approve of advertising brands of condom	3.5	4.30	3.75	3.67	4.49
V120 Approve of advertising specific outlets	3.9	3.39	2.88	2.69	3.66
V121 Approve of advertising price	3.0	2.92	2.79	2.58	3.50
V123 Suitability of newspaper ads	3.3	4.66	4.46	4.04	5.58
V125 Suitability of TV ads	3.6	5.28	5.24	4.29	6.04
V127 Suitability of cinema ads	2.9	6.04	5.58	5.42	6.48
V130 Approve of sale by sign in shop	3.9	3.36	2.72	2.73	3.58
V132 Approve of sale by advice from nurse	2.9	1.97	1.73	1.73	2.38

TABLE 14
Discriminant Analysis: Promotion Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V113		1	.904849	.0000	.3502 + 002	.0000	.3502 + 002	.0000	Approve of advertising idea of FP
2	V104		2	.851358	.0000	.5744 + 002	.0000	.2242 + 002	.0001	Know about FP from doctor
3	V105		3	.805020	.0000	.7867 + 002	.0000	.2122 + 002	.0001	Know about FP from friends
4	V106		4	.790208	.0000	.8513 + 002	.0000	.6464 + 001	.0911	Know about FP from book
5	V109		5	.770930	.0000	.9389 + 002	.0000	.8758 + 001	.0327	Know about FP from public lectures or talks
6	V103		6	.754903	.0000	.1015 + 003	.0000	.7608 + 001	.0549	Know about FP from spouse
7	V130		7	.744851	.0000	.1064 + 003	.0000	.4882 + 001	.1807	Approve of sale by sign in shop
8	V134		8	.734694	.0000	.1115 + 003	.0000	.5163 + 001	.1602	Approve of sale without prescription
9	V133		9	.723077	.0000	.1175 + 003	.0000	.5952 + 001	.1140	Approve of sale by self-service
10	V111		10	.713339	.0000	.1227 + 003	.0000	.5180 + 001	.1591	Know about FP from exhibition
11	V115		11	.704472	.0000	.1276 + 003	.0000	.4941 + 001	.1762	Approve of advertising products of FP
12	V126		12	.688963	.0000	.1369 + 003	.0000	.9253 + 001	.0261	Rank of radio as medium
13	V125		13	.668744	.0000	.1480 + 003	.0000	.1118 + 002	.0108	Rank of TV as medium
14	V114		14	.658469	.0000	.1537 + 003	.0000	.5651 + 001	.1299	Approve of advertising methods of FP
15	V112		15	.651029	.0000	.1583 + 003	.0000	.4577 + 001	.2056	Know about FP from other source
16	V119		16	.643463	.0000	.1626 + 003	.0000	.4370 + 001	.2242	Approve of advertising brands of condom

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.6474635	143.73	48	.0000
1*	.30206	61.85	61.85	.4816522	1	.8378309	57.682	30	.0017
2*	.13144	26.21	88.76	.3408434	2	.2479593	17.423	14	.2344
3*	.05490	11.24	100.00	.2281243					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

TABLE 15
Cross Validation of Discriminant Functions: Promotion Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	109	51	14	22	22
		46.8%	12.8%	20.2%	20.2%
Group 2	67	12	31	16	8
		17.9%	46.3%	23.9%	11.9%
Group 3	48	12	14	18	4
		25.0%	29.2%	37.5%	8.3%
Group 4	113	22	13	15	63
		19.5%	11.5%	13.3%	55.8%

Percentage of 'grouped' cases correctly classified: 48.37%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
337 cases were used for printed output.

segregating program users from non-program users. However, that 48 percent of the cases were classified into the groups to which they actually belonged indicates that promotional differences are by no means unimportant in the segmentation of the market into the four groups.

Price and Purchase Differences

Price and purchase variables with significant F values at less than or equal to 0.05 are presented in Table 16. First, it is interesting to find that except for the two most commonly used products, i.e., the pill and the condom, "switchers" paid more for contraceptive products than the other two groups of users. They also usually purchased in larger quantities each time supplies were obtained. As expected, among the three groups program users of primarily pills and condoms paid the least. They also obtained their supplies in smaller quantities each time. On the other hand, non-program users were found to be not only paying the most for pills and condoms but also purchasing the largest number of condoms each time they obtained this product. Second, in terms of frequency of purchasing, non-program users tended to buy most frequently whereas the "switchers" exhibited the least frequent buying pattern. This difference may be due to the type of method and product used by the two groups. Third, although more non-program users than users from the other groups thought that the price they paid for contraceptives was high and although they were least willing to pay more, they expressed greater willingness than the others to buy the same quantity even if the price were more than tripled. On the contrary, program users on the average indicated that they paid the lowest price and were the most willing to pay more. But, they expressed the least willingness to buy the same quantity if prices were to increase by 25 percent. Fourth, when asked if the buying of FP products constituted a financial burden, more non-program users answered in the affirmative than the other two groups. "Switchers" found it the least burdensome.

Table 17 shows that only 15 of the 20 price and purchase variables are significant for discriminating between the groups multivariately. These 15 selected variables have already been discussed in the above sections. Evidently, little multicollinearity exists among the set of price-purchase variables analyzed. Moreover, the strength of the

TABLE 16
F-test: Significantly Differentiating Price and Purchase Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables: Group 1 Ever User Program Source (n = 68)	Group 2 Ever User Non-program Source (n = 60)	Group 3 Ever User Both Sources (n = 39)	Group 4 Never User (n = 112)
V135 Price of pill	5.9	58.43	119.35	81.29	0.0
V136 Unit of pill usually purchased	3.9	0.59	0.79	0.81	0.0
V137 Price of injection	4.2	0.0	3.37	40.39	0.0
V138 Unit of injection usually purchased	4.3	0.0	negligible	0.40	0.0
V139 Price of other female products	3.2	0.0	12.96	42.83	0.0
V140 Unit of other female products usually purchased	2.8	0.0	0.13	0.40	0.0
V141 Price of condom	11.1	45.77	168.62	159.61	0.0
V142 Unit of condom usually purchased	9.3	0.48	1.57	1.22	0.0
V143 Price of other products	4.1	68.97	26.33	80.41	0.0
V144 Unit of other products usually purchased	4.1	0.69	0.26	0.79	0.0
V145 Frequency of buying	205.0	3.85	3.33	4.38	0.0
V146 Price is considered high	245.7	4.19	3.55	4.00	0.0
V147 Willing to pay higher price	175.8	1.21	1.37	1.31	0.0
V148 Would buy same quantity if price increased by 25%	46.3	0.74	0.55	0.72	0.0
V149 Would buy same quantity if price increased by 26-50%	33.1	1.04	0.87	1.15	0.0
V150 Would buy same quantity if price increased by 51-75%	40.7	1.43	1.00	1.44	0.0
V151 Would buy same quantity if price increased by 76-100% (doubled)	43.1	1.59	1.25	1.64	0.0
V152 Would buy same quantity if price increased by 101-200% (tripled)	47.9	1.79	1.32	1.62	0.0
V153 Would buy same quantity if price increased by more than 200%	49.6	1.84	1.32	1.67	0.0
V154 Buying of FP products is a financial burden	337.9	5.81	5.57	5.82	0.0

TABLE 17
Discriminant Analysis: Price and Purchase Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V154		1	.213386	.0000	.1014 + 004	.0000	.1014 + 004	.0000	Buying of FP products is a financial burden
2	V147		2	.174887	.0000	.1269 + 004	.0000	.2550 + 003	.0000	Willing to pay higher price
3	V148		3	.147124	.0000	.1552 + 004	.0000	.2828 + 003	.0000	Would buy same quantity if price increased by 25% or less
4	V145		4	.135301	.0000	.1614 + 004	.0000	.6228 + 002	.0000	Frequency of buying
5	V153		5	.132469	.0000	.1641 + 004	.0000	.2725 + 002	.0000	Would buy same quantity if price increased by 200% or more
6	V143		6	.130170	.0000	.1664 + 004	.0000	.2279 + 002	.0000	Price of other female products
7	V151		7	.122644	.0000	.1636 + 004	.0000	.2174 + 002	.0001	Would buy same quantity if price doubled
8	V137		8	.116869	.0000	.1705 + 004	.0000	.1981 + 002	.0002	Price of injection
9	V141		9	.110919	.0000	.1721 + 004	.0000	.1601 + 002	.0011	Price of condom
10	V135		10	.107823	.0000	.1735 + 004	.0000	.1363 + 002	.0035	Price of pill
11	V138		11	.104874	.0000	.1747 + 004	.0000	.1234 + 002	.0063	Unit of injection usually purchased
12	V142		12	.103013	.0000	.1759 + 004	.0000	.1147 + 002	.0094	Unit of condom usually purchased
13	V136		13	.099623	.0000	.1771 + 004	.0000	.1186 + 002	.0079	Unit of pill usually purchased
14	V152		14	.097353	.0000	.1779 + 004	.0000	.8413 + 001	.0382	Would buy same quantity if price tripled
15	V150		15	.096022	.0000	.1789 + 004	.0000	.9754 + 001	.0208	Would buy same quantity if price increased by 51-75%
16	V146		16	.094107	.0000	.1797 + 004	.0000	.8043 + 001	.0451	Price is considered high
17		V150	15	.095139	.0000	.1788 + 004	.0000	−.9416 + 001	.0242	Would buy same quantity if price increased by 51-75%

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.0951392	631.62	45	.0000
1*	6.05810	93.20	93.20	.9264549	1	.6715018	106.93	28	.0000
2*	.26168	4.03	97.23	.4554167	2	.8472187	44.516	13	.0000
3*	.18033	2.77	100.00	.3908725					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

discriminant functions are indicated by the relatively large eigenvalues and their large associated canonical correlation coefficients, as well as by the small and significant lambda values. Further, by the classification procedure, the functions enabled 71 percent of the cases to be correctly classified (Table 18). Though more effective in separating never users from users, the functions based on price-purchase variables may also be used to distinguish the program segment from the non-program one and from "switchers."

TABLE 18
Cross Validation of Discriminant Functions: Price and Purchase Variables
(Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	68	37	13	15	3
		54.4%	19.1%	22.1%	4.4%
Group 2	60	17	32	8	3
		28.3%	53.3%	13.3%	5.0%
Group 3	39	11	9	19	0
		28.2%	23.1%	48.7%	.0%
Group 4	112	2	0	1	109
		1.8%	.0%	.9%	97.3%

Percentage of 'grouped' cases correctly classified: 70.61%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
58 cases had at least one missing discriminating variable.
297 cases were used for printed output.

Product-Brand-Pack Difference

From Table 19 it is seen that non-program users had used the most number of pill brands while the "switchers" used the least number. On the average, however, all three ever user groups had used five to six brands before. With respect to condoms, program users had used the most while the "switchers" used the least number of brands. All user groups had used about eight types of condoms on the average. Further, it is not surprising to find that program users cited doctors as selectors of their brand twice as often as non-program users did. When asked if they read the information on the pack or label, "switchers" reported doing so most frequently before buying the products while non-program users did so most often while using and after using the products. Program users were the poorest readers of information on the pack or label either before, during, or after usage. It is, therefore, not surprising that compared to the program users, non-program users mentioned twice as many factors when asked if more information was needed on the label. Moreover, when asked about various aspects of packaging, program users rated shape, size, design, and color scheme of the pack more importantly than the other users did. Non-program users considered brand name and name of the seller or manufacturer more important. "Switchers" placed more emphasis on the material out of which the pack was made.

The discriminant analysis summarized in Table 20 shows that only 9 of the 21 product-brand-pack variables are significant. All of the nine except "brands of injection ever used" and "brands of other female products ever used" have already been discussed in the last section. For both variables, it is seen that non-program users utilized

TABLE 19
F-test: Significantly Differentiating Product-Brand-Pack Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 102)	Group 2 Ever User Non-program Source (n = 23)	Group 3 Ever User Both Sources (n = 146)	Group 4 Never User (n = 51)
V155 Brands of pill ever used	17.4	5.38	5.61	5.23	0.0
V158 Brands of condom ever used	7.1	8.19	8.04	7.20	0.0
V160 Self-selected brand	50.4	1.37	1.61	1.46	0.0
V161 Spouse selected brand	49.7	1.31	1.57	1.47	0.0
V162 Doctor selected brand	44.1	0.77	1.13	0.99	0.0
V163 Other member of family selected brand	58.9	1.41	1.74	1.60	0.0
V164 Friends selected brand	58.3	1.41	1.70	1.60	0.0
V165 Others selected brand	57.7	1.40	1.74	1.58	0.0
V166 Others selected brand	59.3	1.41	1.74	1.60	0.0
V175 Read pack or label before buying	15.2	0.32	0.52	0.72	0.0
V176 Read pack or label when using	13.4	0.16	0.78	0.29	0.0
V177 Read pack or label after using	3.0	0.06	0.26	0.10	0.0
V178 Factors where more information needed	6.7	0.72	1.43	1.02	0.0
V179 Material of pack	19.2	2.89	2.96	2.73	0.18
V180 Shape and size of pack	25.2	3.17	3.52	3.24	0.16
V181 Design of pack	25.5	3.20	3.78	3.23	0.18
V182 Color scheme	25.3	3.22	3.65	3.22	0.19
V183 Brand name	18.8	2.61	3.04	2.16	0.08
V184 Name of seller or manufacturer	17.6	2.51	3.13	2.28	0.14

TABLE 20
Discriminant Analysis: Product-Brand-Pack-Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V166		1	.641149	.0000	.1780 + 003	.0000	.1780 + 003	.0000	Others selected brand
2	V176		2	.596267	.0000	.2023 + 003	.0000	.2433 + 002	.0000	Read pack or label when using
3	V175		3	.557440	.0000	.2247 + 003	.0000	.2241 + 002	.0001	Read pack or label before buying
4	V183		4	.543093	.0000	.2337 + 003	.0000	.8987 + 001	.0295	Brand name
5	V158		5	.530140	.0000	.2424 + 003	.0000	.8679 + 001	.0339	Brands of condoms ever used
6	V164		6	.521021	.0000	.2486 + 003	.0000	.6175 + 001	.1034	Friends selected brand
7	V156		7	.514415	.0000	.2530 + 003	.0000	.4403 + 001	.2211	Brands of injection ever used
8	V157		8	.508158	.0000	.2574 + 003	.0000	.4437 + 001	.2180	Brands of other female products ever used
9	V160		9	.502654	.0000	.2613 + 003	.0000	.3915 + 001	.2708	Self-selected brand

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	:	After Function	Wilks' λ	χ^2	d.f.	Sig.
					:	0	.5026536	216.33	27	.0000
1*	.56808	69.13	69.13	.6018933	:	1	.7881988	74.853	16	.0000
2*	.15929	19.38	88.51	.3706805	:	2	.9137520	28.367	7	.0002
3*	.09439	11.49	100.00	.2936801	:					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

more brands than the other two groups. Ten of the variables significant univariately are excluded from the multivariate analysis, indicating considerable overlap among the variables, and hence, multicollinearity.

With eigenvalues, canonical correlation coefficients, and Wilks' lambdas neither large nor small, the discriminant functions cannot be regarded as strong. The power of the functions in separating the groups is further expressed by the extent of correct classification. With 52 percent of the cases correctly grouped, the variables are best in distinguishing never users as expected, and in discriminating between the non-program users and the other two user groups (see Table 21).

TABLE 21
Cross Validation of Discriminant Functions: Product-Brand-Pack Variables
(Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	102	41	9	22	30
		40.2%	8.8%	21.6%	29.4%
Group 2	23	4	12	4	3
		17.4%	52.2%	17.4%	13.0%
Group 3	147	32	22	64	29
		21.8%	15.0%	43.5%	19.7%
Group 4	51	0	0	0	51
		.0%	.0%	.0%	100.0%

Percentage of 'grouped' cases correctly classified: 52.01%.
Classification processing summary:
338 cases were processed.
4 cases were excluded for missing or out-of-range group codes.
11 cases had at least one missing discriminating variable.
323 cases were used for printed output.

Motivator Differences

Table 22 shows that only two of the seven motivator variables have significant mean differences among the groups. It was found that non-program users made the most number of FP-related decisions with their spouses and program users made the least number of such decisions with their spouses. On the other hand, non-program users made relatively fewer decisions while "switchers" made the most number of FP-related decisions with their doctors. Never users are clearly distinguishable from users in that they mentioned the smallest number of FP-related decisions made with both their spouses and doctors.

From Table 23, it is clear that five of the seven motivator variables are included in the discriminant functions. It was found that "switchers" made FP-related decisions by themselves most often while non-program users made the decisions by themselves the least often. Also, non-program users made relatively more decisions with "other" persons than the other user groups did.

Again by the measures shown in Table 23, it is clear that the discriminant functions based on motivator variables considered are not very powerful in separating the groups.

TABLE 22
F-test: Significantly Differentiating Motivator Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables: Group 1 Ever User Program Source (n = 75)	Group 2 Ever User Non-program Source (n = 50)	Group 3 Ever User Both Sources (n = 40)	Group 4 Never User (n = 103)
V169 Factors decided with spouse	5.3	4.00	4.12	4.03	3.16
V170 Factors decided with doctor	40.3	2.48	1.94	2.83	0.35

TABLE 23
Discriminant Analysis: Motivator Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V170		1	.686099	.0000	.1208 + 003	.0000	.1208 + 003	.0000	Factors decided with doctor
2	V168		2	.661345	.0000	.1351 + 003	.0000	.1430 + 002	.0025	Factors decided by self
3	V169		3	.640935	.0000	.1469 + 003	.0000	.1183 + 002	.0080	Factors decided with spouse
4	V174		4	.632299	.0000	.1524 + 003	.0000	.5509 + 001	.1381	Factors decided with other 2
5	V173		5	.617462	.0000	.1591 + 003	.0000	.6640 + 001	.0843	Factors decided with other 1

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.6174620	126.56	15	.0000
1*	.57279	95.07	95.07	.6034794	1	.9711384	7.6876	8	.4646
2*	.02943	4.88	99.95	.1690678	2	.9997142	.75040-001	3	.9947
3*	.00029	.05	100.00	.0169064					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

From Table 24 it can be seen that only 48 percent of the cases may be correctly predicted by these functions. Nevertheless, they are able to tell apart never users readily while among user groups the "switchers" may also be separated fairly successfully.

TABLE 24
Cross Validation of Discriminant Functions: Motivator Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	75	5	13	42	15
		6.7%	17.3%	56.0%	20.0%
Group 2	50	5	10	15	20
		10.0%	20.0%	30.0%	40.0%
Group 3	40	5	4	24	7
		12.5%	10.0%	60.0%	17.5%
Group 4	104	2	5	7	90
		1.9%	4.8%	6.7%	86.5%

Percentage of 'grouped' cases correctly classified: 47.96%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
68 cases had at least one missing discriminating variable.
269 cases were used for printed output.

General Shopping and Social Activities Differences

According to the F-test, only 13 of the 32 general shopping and social activities variables were found to differ significantly among the groups. Never users were found to regard factors such as economy, availability of a wide range of products, availability of a wide range of brands, store layout and atmosphere, display, merchandise quality, and good shopping facilities as less important than the users. Among the user groups, non-program users clearly ranked all the general shopping variables listed in Table 25 more important than the other two groups. It is not surprising that program users ranked nearly all the same variables less important than the other two groups except for economy, credit facilities, and availability of a wide range of brands. It is also observed that non-program users read the newspaper most frequently, whereas program users did so least frequently. This may be explained by their respective levels of education. Moreover, non-program users had social interactions most frequently while program users did so least frequently.

Nine of the the variables were selected in the multivariate analysis but they were non-significant in the F-tests (see Table 26). It was found that "switchers" regarded convenience, accessibility, and distance of shops from home as more important than the other groups while non-program users regarded suitability of the place, i.e., its social acceptability and its prestige, with greater significance. Further, as expected, non-program users engaged in sports and other hobbies more frequently than the other groups.

Although the eigenvalues and Wilks' lambdas of these variables do not show powerful discriminant functions, the classification procedure indicates that they may be used to separate non-program users from program users more readily than from "switchers"

TABLE 25
F-test: Significantly Differentiating General Shopping and Social Activities Variables

Variable Significant at a Probability of Less than or Equal to 0.05	F-value	Means of Significant Variables			
		Group 1 Ever User Program Source (n = 109)	Group 2 Ever User Non-program Source (n = 67)	Group 3 Ever User Both Sources (n = 48)	Group 4 Never User (n = 113)
V192 Good sales service	3.1	1.78	1.57	1.69	1.72
V193 With self-service	5.3	1.82	1.60	1.80	1.83
V194 Economy	2.8	1.40	1.27	1.46	1.48
V195 Credit facilities	3.6	1.87	1.75	1.96	1.84
V196 Wide range of products	4.9	1.55	1.36	1.52	1.65
V197 Wide range of brands	7.6	1.71	1.42	1.58	1.73
V198 Store layout & atmosphere	6.9	1.80	1.61	1.67	1.88
V199 Merchandise display	3.9	1.82	1.67	1.79	1.88
V200 Merchandise quality	7.1	1.79	1.54	1.77	1.82
V204 Good shopping facilities	6.5	1.83	1.66	1.67	1.88
V209 Frequency of reading newspaper	2.8	2.18	1.21	1.83	2.34
V211 Frequency of inviting friends	4.2	6.66	5.03	6.50	6.23
V212 Frequency of being invited by friends	4.4	6.53	5.18	6.98	6.33

TABLE 26
Discriminant Analysis: General Shopping and Social Activities Variables (Summary Table)

Step	Action Entered	Action Removed	Vars in	Wilks' λ	Sig.	Rao's V	Sig.	Change in V	Sig.	Label
1	V197		1	.936189	.0001	.2270 + 002	.0000	.2270 + 002	.0000	Wide range of brands
2	V212		2	.906894	.0000	.3375 + 002	.0000	.1105 + 002	.0115	Frequency of being invited by friends
3	V204		3	.878653	.0000	.4300 + 002	.0000	.1125 + 002	.0104	Good shopping facilities
4	V194		4	.854775	.0000	.5496 + 002	.0000	.9964 + 001	.0189	Economy
5	V200		5	.838267	.0000	.6206 + 002	.0000	.7096 + 001	.0689	Merchandise quality
6	V211		6	.822474	.0000	.6873 + 002	.0000	.6672 + 001	.0831	Frequency of inviting friends
7	V188		7	.809124	.0000	.7487 + 002	.0000	.6139 + 001	.1050	Easily accessible
8	V187		8	.788888	.0000	.8449 + 002	.0000	.9614 + 001	.0221	Convenience of shopping
9	V195		9	.772432	.0000	.9227 + 002	.0000	.7787 + 001	.0506	Credit facilities
10	V189		10	.759963	.0000	.9870 + 002	.0000	.6431 + 001	.0924	Morally acceptable
11	V215		11	.747708	.0000	.1052 + 003	.0000	.6524 + 001	.0887	Whether a member of club or society
12	V209		12	.732616	.0000	.1136 + 003	.0000	.8397 + 001	.0385	Frequency of reading newspaper
13	V214		13	.720395	.0000	.1196 + 003	.0000	.6022 + 001	.1106	Frequency of having other hobbies
14	V198		14	.711210	.0000	.1244 + 003	.0000	.4720 + 001	.1935	Store layout & atmosphere
15	V193		15	.700710	.0000	.1299 + 003	.0000	.5558 + 001	.1352	With self-service
16	V190		16	.691626	.0000	.1349 + 003	.0000	.5014 + 001	.1708	Socially acceptable
17	V205		17	.684453	.0000	.1390 + 003	.0000	.4072 + 001	.2538	Pharmaceutical shop from home
18	V196		18	.677917	.0000	.1424 + 003	.0000	.3370 + 001	.3380	Wide range of products
19	V213		19	.671160	.0000	.1459 + 003	.0000	.3521 + 001	.3181	Frequency of playing games
20	V293		20	.664650	.0000	.1494 + 003	.0000	.3537 + 001	.3160	Prestige of place
21	V192		21	.657744	.0000	.1532 + 003	.0000	.3712 + 001	.2943	Good sales service

Canonical Discriminant Functions

Function	Eigenvalue	% of Variance	Cumulative %	Canonical Correlation	After Function	Wilks' λ	χ^2	d.f.	Sig.
					0	.6577443	135.53	63	.0000
1*	.27698	60.22	68.22	.4657284	1	.8399263	56.431	40	0441
2*	.11827	25.72	85.94	.3252060	2	.9392622	20.271	19	.3785
3*	.06467	14.06	100.00	.2464503					

*Marks the three canonical discriminant function(s) to be used in the remaining analysis.

and more so from never users. According to Table 27 the functions may be used to classify 44 percent of the cases into the group to which they actually belonged.

TABLE 27
Cross Validation of Discriminant Functions: General Shopping and Social Activities Variables (Classification Results)

Actual Group	No. of Cases	Predicted Group Membership			
		1	2	3	4
Group 1	109	42	21	15	31
		38.5%	19.3%	13.8%	28.4%
Group 2	67	10	40	9	8
		14.9%	59.7%	13.4%	11.9%
Group 3	48	13	3	25	7
		27.1%	6.3%	52.1%	14.6%
Group 4	113	29	24	18	42
		25.7%	21.2%	15.9%	37.2%

Percentage of 'grouped' cases correctly classified: 44.21%.
Classification processing summary:
338 cases were processed.
1 case was excluded for missing or out-of-range group codes.
337 cases were used for printed output.

CONCLUSIONS

Findings of the present research lead to the conclusion that the source of contraceptive supplies is a significant and usable basis for segmenting the market for contraceptive methods in Malaysia. In other words, in attempting to follow a social marketing approach for the sale and distribution of FP products in the private sector, the segmentation-by-source-of-contraceptive-supply strategy is strongly recommended. Not only would marketing resources be more efficiently utilized but the probability of success would also be increased when steps are geared towards specific target segments whose characteristics, attitudes, behavior, motivations, and reactions to marketing mix variables are known.

This study further concludes that all the nine areas investigated as discriminators between the hypothesized groups may be used with varying degrees of effectiveness in distinguishing the market segments from one another. Table 28 summarizes the eigenvalues and their canonical correlation coefficients, Wilks' lambdas and their associated chi-square values of the first (i.e., strongest) discriminant functions and the percentage of correct classification of cases in each of the nine sub-analyses. Socio-economic and KAP variables were found to be more powerful discriminators than the marketing mix variables because of their larger eigenvalues (which are associated with high correlation coefficients), their smaller Wilks' lambdas (which have very large chi-square values), and their larger percentage of successful classification of cases. Among the marketing variables, it may be concluded that price and purchase variables, more than the rest of the variables, are distinctly better for discriminating among the groups of buyers or segments. Choice of distribution outlet variables or what is commonly referred to as patronage motives follow the price and purchase variables in this regard. Product-brand-pack variables and promotion variables were found to be bases of fairly similar strengths in telling apart market segments. General shopping and social activities

TABLE 28
Discriminant Analysis: Summary for Nine Sets of Independent Variables

Independent Variable Set	Eigenvalue	Canonical Correlation	Wilks' Lambda	Chi-square	% of Cases Correctly Classified
1. Socio-Economic	2.12	0.82	0.26	360.19	66.55
2. KAP	2.07	0.82	0.18	546.22	76.05
3. Approval of Contraceptive Distribution Outlet	0.19	0.40	0.74	98.71	45.21
4. Choice of Distribution Outlet	0.88	0.69	0.38	214.90	60.17
5. Promotion	0.30	0.48	0.64	143.73	48.37
6. Price and Purchase	6.06	0.93	0.10	631.62	70.61
7. Product-Brand-Pack	0.57	0.60	0.50	216.33	52.01
8. Motivator	0.57	0.60	0.62	126.56	47.96
9. General Shopping and Social Activities	0.28	0.47	0.66	135.53	44.21

variables, however, were not very powerful discriminators among the groups by any of the measures. Lastly, approval of contraceptive distribution outlet variables can be regarded as the weakest basis for segmenting the market.

As this is an initial attempt at using multivariate discriminant analysis and univariate F-tests for market segmentation in general and an initial attempt at developing measures (or bases) for segmenting the contraceptive market particularly for Malaysia, the present conclusions must be subject to further and more rigorous testing. Other areas of significance may have been overlooked. Despite the number of variables examined under each of the nine areas other variables, possibly of greater relevance, may have been missed or, measures for the same variables themselves may be improved for sharper results. Further, this study did not bring together all variables within the nine sub-heads in a simultaneous test of strength in discriminating among the four groups of buyers. Nevertheless, their changes in V as shown in the tables do indicate their relative contribution to the discriminant functions of the respective sets of variables. However, future research may safely disregard variables already considered but not entered into the functions as important discriminators.

The profile of non-program users is found to be clearly different from that of program users, "switchers," and never users. Based on the findings of this research, the non-program segment which corresponds to the private or commercial sector may be characterized as follows:

1. They are primarily non-Malay, non-Muslim, with fewer children than the other segments, and with children of bigger average age differences than those of the other segments.
2. They are more highly educated, with bigger individual and household incomes, and come from higher occupational levels than the other segments.
3. They are more dependent on spouses, relatives, friends, etc., to buy or procure FP products than the other segments who in more cases obtain these products themselves.
4. They (or their buyers) travel the farthest distance from their home or workplace to the source of supply, using more expensive means of transport than the other segments.

5. They have the highest level of awareness of FP and contraceptive methods, and are more willing to practice birth control although they indicate less approval of FP than the other two user segments.
6. They have used the most number of methods across groups, favoring "other female methods" most and disfavoring the pill most among the segments. They also most strongly disapprove of using abstinence and most weakly disapprove of using withdrawal.
7. They know the least number of places for obtaining the specific products of FP (except for pills and condoms) and have patronized fewer places than the other user segments.
8. They tend to approve of medical and paramedical sources of supplies more strongly than the other segments although they least approve of government hospitals and clinics. They are more open to the idea of using unconventional distribution outlets such as sundry shops, post offices, pubs/bars, mail order, etc., than the program users, but less open to this idea when compared to the "switchers."
9. Exhibiting middle-class attitudes and behavior, they are more responsive to distribution outlets characterized by anonimity, speed, non-requirement of prescription, self-service, availability of a wide range of products, amenable shopping facilities, etc., than to factors associated with price, quality, convenience, and social and egoistic considerations.
10. To them books and printed materials are as important sources of information on FP as doctors are to program users. They also regard spouses, friends, and "others" as more important sources of FP knowledge than the other groups who find public lectures, talks, and exhibitions more important.
11. Although less approving than the "switcher" segment of using advertising on specific aspects and products of FP, they more strongly approve of the advertising methods of FP in general, of sale by signs in shops, and of sale by advice from paramedical personnel such as nurses. They least approve of advertising the pill in particular.
12. They pay more for pills and condoms and buy in larger quantities and more frequently than the other segments. They are also most willing to purchase the same quantity even if the price were tripled.
13. They have used the most number of brands of pills. They read the labelling on packages more than the others when using and after using the products. They also indicate that more information to go with the products is needed. Although physical characteristics of packaging are not significant considerations to them, brand names and names of sellers or manufacturers are emphasized as very important.
14. They make more FP-related decisions with their spouses than other segments who make more decisions with their doctors. They make the least number of decisions by themselves.
15. They give more importance to "favorable" facilities for general shopping than the other segments. They also read the newspapers, interact socially, engage in sports more frequently, and have more hobbies than the other segments.

The above conclusions have profound implications for the planning and development of marketing strategies and programs to attract the non-program segment. The importance of knowledge about the target market in the commercial sector, their buying motives, habits, attitudes, and behavior towards the products, price, promotion, and distribution of contraceptives cannot be overemphasized.

A STUDY OF DIFFERENTIALS IN INTRA-UTERINE DEVICE USE AND ITS EFFECTS ON THE FERTILITY OF WOMEN IN RURAL BARRIOS OF MISAMIS ORIENTAL PROVINCE, PHILIPPINES

Magdalena C. Cabaraban

Various types of investigations concerning family planning programs have been undertaken during the last two decades. Findings were varied, interesting, and at times inconsistent. Yet somehow they triggered further research whose outcome either reinforced or negated the previous results. Some studies were highly localized, others far-embracing with seemingly controversial methodologies and inconclusive results.

Past and current research alike have their different aspects reflecting individual interest and orientation. The range of investigations practically covers the entire gamut of the program's mechanics and dynamics. Some emphasized the exploratory and descriptive nature of the program's strengths and weaknesses, while others concentrated on program performance, i.e., its effects, effectiveness, and efficiency. Generally, studies on the particular program's effects focused upon the medical aspect rather than the demographic or sociological ones (Reynolds 1972).

Specifically, research investigations concerning the intra-uterine device (IUD) as an important method of contraception are voluminous. A substantial body of experience with the IUD, particularly findings on clinical effectiveness (Tietze and Lewitt 1970; Sivin 1973; Villegas et al. 1975) suggests the method to be effective, inexpensive, and also convenient. Findings of Laing (1974) regarding use-effectiveness in the Philippines pointed to the IUD as the most successful method with 86 percent of the acceptors retaining the device at the end of six months. A study in a similar vein by Sugathan et al. (1976) produced a congruent result, namely, 27 percent of the acceptors had continued the method for more than five years and the average length of retention per woman was estimated to be 43.4 months or approximately three and a half years. High prevalence of IUD use was attributed to the fact that the IUD is the only method that does not require sustained motivation for continued use (Laing 1974), and to the influence and concerted efforts of the medical and paramedical teams to promote the use of the method (Astawa et al. 1975).

Demographic impact of the IUD was the main focus of some investigations (Chow 1968; Liu, Chow, and Abbey 1972). Results of such efforts were not as conclusive as the investigators averred. However, they demonstrated a noteworthy fact, namely, the learning effects of the IUD for the acceptors triggered the use of other fertility control methods after termination. Hence, the use of the IUD, even for a short duration, instilled a motivation to use other methods of contraception if and when acceptors desired to terminate use.

During the later part of the 1960s as the IUD gained popularity in developing countries, research investigations were centered on the demographic and socio-economic characteristics of the IUD acceptors. Characteristics associated with acceptance, retention, and continuation vary from culture to culture. Pakistan, for instance, reported women with high parity using the device to limit family size (Helbig et al. 1970), while Australian women's choice of the method was more of an anti-natal device for all ages

and parities (Caldwell and Ware 1973). In Ghana, IUD acceptors were the older high-parity women and low acceptance was attributed to unfavorable rumors of the side effects. Meanwhile, Taiwan presented a different picture where considerable impact of the IUD was among women 30 to 34 years of age, with three to four live births, and of lower educational status. Thailand reported similar findings: average IUD acceptors had four years of education; those with three or more children had a higher rate of continued practice although no age differential was evident (Vimuktanon and Rosenfield 1971).

The diverse results of cross-country studies necessitate further investigations on the local level to ascertain local trends and behavior of acceptors and non-acceptors.

THE PROBLEM AND ITS RELEVANCE TO THE PHILIPPINE SITUATION

Two basic and current problems of the Philippine population program are the rural outreach and the low continuation rate among family planning (FP) acceptors (Lorenzo 1976). The Commission of Population (POPCOM) has directed its main strategy to the low-income group and the rural women. To fulfill POPCOM's objectives, activities have been devised that include extending and updating FP services through alternative modes of delivery, along with a better program of information, education, communication, and motivation for the target population. Also projected is a workable training program designed to produce competent and efficient personnel, and a program on research and evaluation.

Of major relevance to the research and evaluation component of the population program in the Philippines is the answer to the questions: Who had the program reached? Are acceptors of a particular method different from acceptors of other methods? If so, in what aspects do they differ?

In consonance with the POPCOM thrust, the present study, within the context of rural Philippines, investigated differentials between IUD acceptors and non-acceptors, attempted to determine the effects of the IUD method on the fertility of the rural barrio women, and identified factors associated with acceptance and discontinuation.

More specifically the study sought to investigate the following:

1. the effect of IUD use on the fertility of women in the rural area;
2. the socio-economic and demographic differentials between IUD users and non-IUD users; and
3. the factors associated with IUD acceptance and discontinuation of IUD use.

Definition of Terms

For the purpose of this study, two kinds of acceptors were distinguished — the IUD acceptor and the "other methods" acceptor. An IUD acceptor was a currently married woman between the ages of 15 and 49, who at the time of interview had been using an IUD or had an IUD insertion for one or more months in the calendar year 1976.

In contrast, the "other methods" acceptor was a person who was currently using a contraceptive method other than the IUD or had accepted a method for one or more months in 1976. The "other methods" included pills, condom, rhythm (both calendar and temperature), sterilization, foam, and tablets and the like. Coitus interruptus, abstinence, and the use of herbs to prevent pregnancy were disregarded. Those who practiced such methods were considered non-acceptors in this investigation.

A non-acceptor was a currently married woman who had never used any form of modern contraceptives (enumerated above under "other methods") since cohabitation up to the interview date.

A listing of currently married women aged 15 to 49 was done in sample *sitio*[1] drawn

[1]A *sitio* is a small subdivision of a barrio and usually contains 50 to 100 households.

from the study area. A brief distinction between the sample areas and the study area is in order. The study area is the methodological sample of the Mindanao Center for Population Studies (MCPS), a division of the Research Institute for Mindanao Culture (RIMCU) which is affiliated with Xavier University, a chartered educational institution located in Cagayan de Oro City, Philippines. The 123 *sitio* which make up the study area are the sampling frame from which the 24 *sitio* comprising the sample area for the present study were drawn.

Limitations of the Study

It is recognized that this study, restricted as it is to a small area in a single province, will not lead to conclusions that are generalizable in the statistical sense.

The small sample size is another limitation which affects the extent of analysis. Therefore, the interpretation of the results must be treated with caution. To reduce non-sampling errors, substitution of sample women who out-migrated were not allowed, nor was proxy reporting. In the case where a currently married woman drawn into the sample was no longer residing in the sample household or was away for an indefinite period of time, another woman from the population was drawn by the use of the table of random numbers. Efforts were not spared in making several interview-calls in order to obtain self-response information.

The definition of a non-acceptor may possibly introduce a bias in the data. Withdrawal, abstinence, and the use of herbs do prevent conception to a certain degree. But, compared to modern contraceptives, they are admittedly less effective.

Despite these limitations, the study hopes to furnish an in-depth portrait of the IUD acceptor in a rural area undergoing massive rural development. The characteristics of rural people among the less developed countries tend to be homogeneous, hence, results of this investigation may have wider applicability than the sampling design would suggest.

REVIEW OF RELATED LITERATURE

The historical and medical background of the IUD, the demographic and socio-economic differentials in its use and non-use, and studies on the continuation and discontinuation of IUD use are discussed in this section.

Historical and Medical Background of the IUD

No one can satisfactorily explain how the device worked in preventing pregnancy but the idea germinated from the age-old practice of the Middle Eastern people, who placed stones in the uteri of camels to prevent pregnancy during long travels in the desert (Population Report 1975). A series of trials and errors in developing and perfecting the device followed, until eventually a Grafenberg ring was first introduced and widely used in Germany during the 1920s. Its usage was short-lived when cases of infection occurred. The method went into disuse but was finally revived in Japan when the Ota ring was introduced. The reception of the device was fairly popular and usage spread to different parts of the world, especially with the development of the Margulies spiral and the Lippes Loop. The latter so far has withstood the test of time since Dr Jack Lippes designed it in 1960. To date, various devices of different shapes and materials have been introduced and used. Simultaneously, unceasing clinical researches have been carried out to determine the different performances of each device.

During the mid-1960s, the IUD appeared to gain world-wide acceptance after voluminous favorable reports established the device as medically sound. This acceptance was based on one explanation, namely, that the device seemed to interfere in some manner with the implantation of the sterilized egg in the endometrium.

The less developed countries enthusiastically accepted the method. India, for instance,

registered the highest number of IUD insertions, nearly one million. Almost all the Asian countries initially displayed a warm reception of the method. But, two or three years later, a noticeable decrease in IUD use was also observed. Such an occurrence along with some unfavorable results in the performance of other types of IUD, particularly the Dalkon Shield, triggered more investigations.

Demographic and Socio-Economic Differentials in IUD Use and Non-use

The studies on differentials among acceptors and non-acceptors are acknowledged to be important (Smith, S. 1970). They provide vital information necessary in the evaluation and decision-making processes with respect to societal values and cultural norms. For instance, a study in Uttar Pradesh showed that a negative attitude towards a certain program was fostered because of inadequate attention to human factors.

Researchers are in agreement that characteristics of the acceptors vary from country to country, especially regarding social and demographic factors. Viewed against the relationship of these characteristics to the acceptance and the discontinuation of use, knowledge of such differences hold considerable importance.

A study of women belonging to lower socio-economic groups in the city of Baltimore, Maryland, conducted by Hall and Reinke (1969), found that the use or the non-use of contraception depends primarily on the type of method used.

A year later in Australia, Caldwell and Ware (1973), in their investigations of the contraceptive usage of Melbourne wives, noted the levelling-off of pill use among the better educated and the more affluent. The trend seen was toward the IUD and the researchers were able to present evidence suggesting that the IUD was being used primarily as the anti-natal device of those who wanted no more children, rather than as an all-purpose device for women of all ages and parities.

The trend was not confined to a shift from the use of the pill to an increase in acceptance of the IUD. Research in Trinidad and Tobago (Harewood 1973) provided evidence for a considerable shift from a less effective to a more effective method. In the analysis of Philippine data, Concepcion and Smith (1977) found a pronounced increase in the proportion of those who tried highly effective methods from 1968 to 1973. In fact, an earlier investigation (Barreto 1974) reported withdrawal and rhythm to be the most often used methods in 1968, while the use of the pill and the IUD doubled during the early seventies.

From West Pakistan (Helbig et al. 1970), IUD acceptors 35 years old and above and with five or more living children were found to retain the device much longer. In contrast, women 35 years old and above but with four or less living children had low retention rates. Furthermore, factors such as length of travel to clinic and not being informed about the side-effects were believed to be associated with a short duration of retention.

In Thailand (Vimuktanon and Rosenfield 1971) an average IUD acceptor had four years or less of educational attainment and belonged to the low-income level.

In Morocco and Tunisia (Lecomte and Marcoux 1976) acceptors were found to be of a relatively high age and to have a large number of living children. These findings support earlier investigation results.

A study of the demographic impact of the IUD among the Taiwanese acceptors (Chow, Chang, and Liu 1969) reported greater impact among women 30 to 34 years of age, of lower educational status, and with lower parity, i.e., three to four live births.

Studies on Continuation and Discontinuation of IUD Use

In 1962, the Population Council under the direction of Dr Christopher Tietze undertook an evaluation of the IUD. After nearly a decade of research, the findings (Tietze and Lewitt 1970) served as a benchmark for further investigation on the continuation and

discontinuation of IUD use. Although the thrust of the investigation was more on the clinical and medical aspects, some of the conclusions drawn were related to the acceptance and the negation of IUD methods. For instance, it was found that three out of five women were still using the IUD two years after insertion, that removal was the most important reason for IUD discontinuation even when removals for planning pregnancy were excluded, and that the risk of pregnancy was highest in the first year and somewhat lower in subsequent years. With regard to those who discontinued use, the findings associated expulsion to age and parity while removals due to pain and bleeding were associated with duration of use and parity.

Studies in several countries (Chow, Chang, and Liu 1969; Liu, Chow, and Abbey 1972; Mauldin, Nortman, and Stephan 1967) confirmed the results of the Tietze and Lewitt endeavors. Data from the United States, for instance, showed that women with five or more children retained the device twice as long as those with only one or two children. In Taiwan, expulsions and removals were high immediately after insertion, and, therefore, risk of pregnancy was highest during the first year and decreased sharply with age and parity. Principal reasons for stopping use were pregnancy and side-effects (Harewood 1973; Laing 1974).

METHODOLOGY

This section describes the locale of this study, its sampling design, and data collection procedures.

The Locale of the Study

Map 1 shows the study area located in the western part of Misamis Oriental along the northern coast of Mindanao Island, Philippines. It comprises parts of four municipalities, namely, El Salvador, Alubijid, Laguindingan, and a small portion of Gitagum. A contiguous space of about 104 square kilometers, it includes 123 *sitio* or parts of *sitio* with a population of approximately 25,000 as of July 1975. The nearest municipality, El Salvador, is about 18 kilometers distant, while the farthest, Gitagum, is about 34 kilometers from the city center.

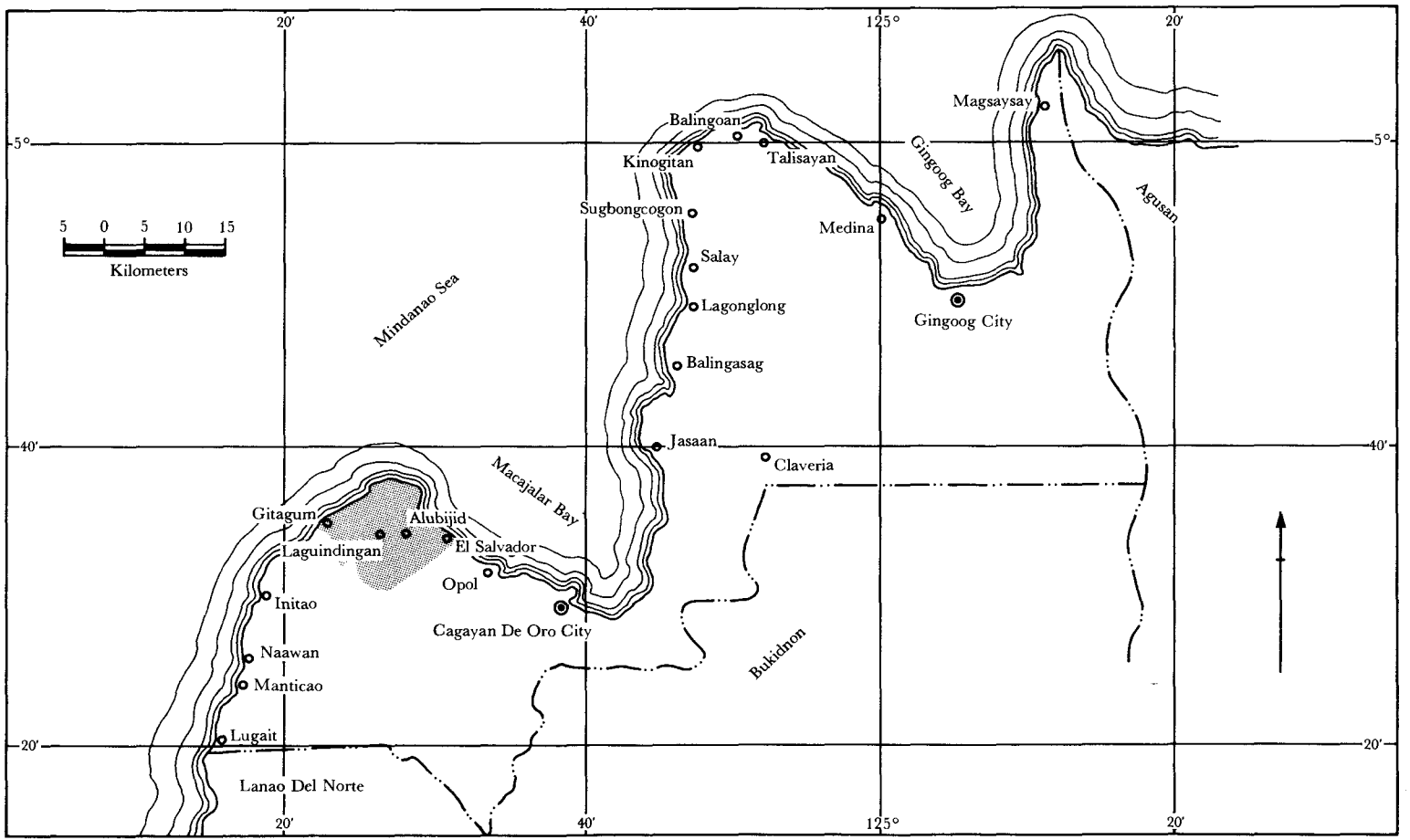
Map 2 shows the study area as a whole. Numerous hills and valleys characterize the area. The coastlines vary in width. Some parts are narrow strips; other parts, particularly those in the municipality of Alubijid, have wide coastal plains. Despite the rugged terrain, all *sitio* are accessible by roads or by dry weather roads.

The area is essentially agricultural. Two thirds of the population derive their livelihood from farming, although those who live near the coast engage in small-scale fishing. The main crops are corn, coconuts, tobacco, and rice.

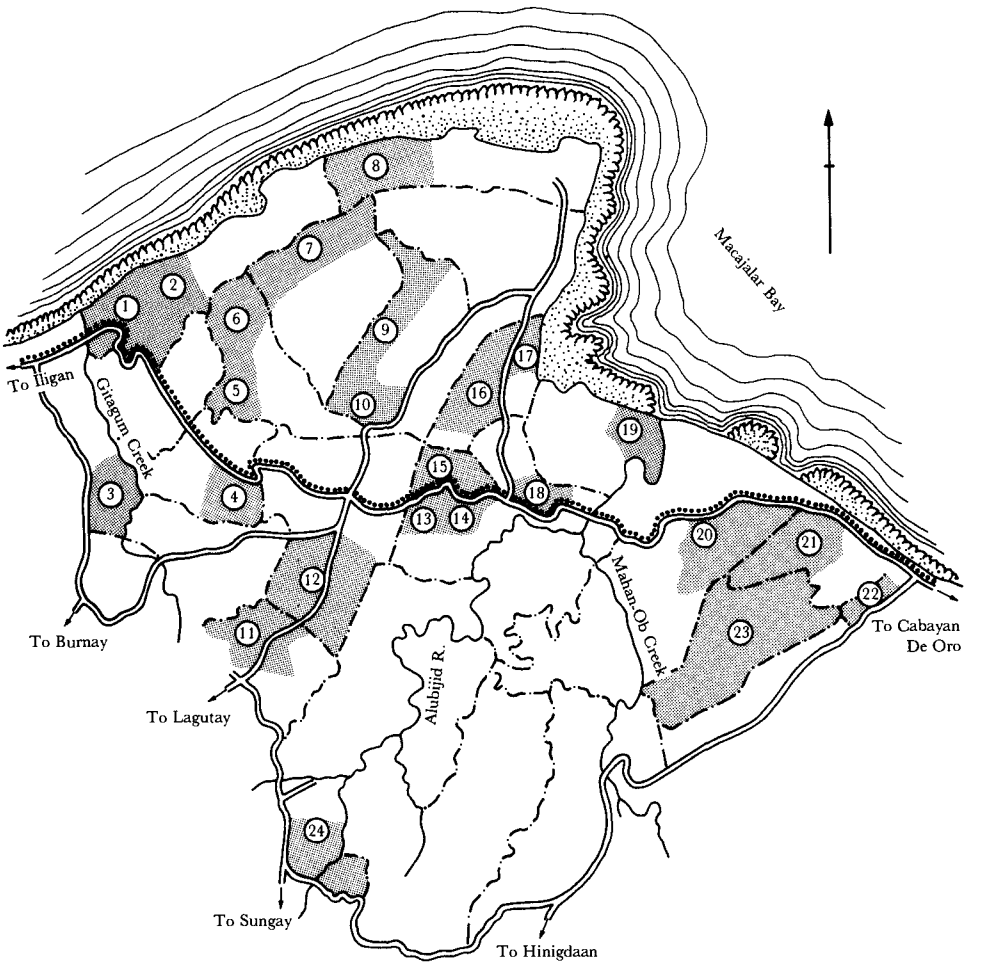
This western section of Misamis Oriental started to experience economic development with the creation of the National Electrification Administration (NEA) in August 1976. Subsequently, the Misamis Oriental Rural Electric Service Cooperative (Moresco) was established in 1971. The pilot project served ten municipalities and its component barrios including the barrio of Cagayan de Oro City. The total household connections in early 1975 exceeded 7,000 households and to date, power lines have already appeared on the eastern tip of the province (Madigan, Herrin, and Mulcahy 1976).

An evaluation research on the impact of rural electrification conducted by the RIMCU of Xavier University during the later part of 1975 produced a report whose preliminary findings implied increases in the rural labor productivity. These increases resulted in growing income and rural employment opportunities sufficient to absorb the substantial rural labor force, particularly during the slack season. Although the results were far from conclusive, undeniably rural electrification had triggered changes in the rural way of life.

MAP 1
Province of Misamis Oriental Showing Study Area



MAP 2
Western Portion of Misamis Oriental Province



KEY

1 Mauswagon
2 Bolisong
3 Fabricante
4 North Kolambog
5 Clarin
6 Pagangon
7 Mejos
8 Campo
9 Danao
10 Baclayon
11 Lapad Poblacion
12 Magsaysay
13 Bugo
14 Lumbo Poblacion
15 Pagangon
16 Alugan
17 Bonbon
18 Munay
19 Camarin
20 Upper Loguilo
21 Sinaloc
22 Tuburan
23 Kibonbon
24 Lourdes

National Highway
Municipal Road
Barrio Boundary
River; Creek
Coral

While it is true that the eastern portion of Misamis Oriental appears to be more heavily industrialized than the western section, mainly due to the Japanese wholly-owned Philippine Sinter Corporation, a subsidiary company of the Kawasaki Steel Corporation of Japan, the western portion already has three big industries, namely, a steel corporation, a timber processing industry, and an agro-industrial enterprise. More large industries are expected to operate before the end of 1977. Medium- and small-scale enterprises have started to proliferate. Among these are auto repair shops, foundry shops, hollow blocks factories, rice and corn mills, dressmaking and tailoring shops, plus innumerable *sari-sari*[2] stores complete with storage facilities. Aside from these income-generating endeavors, agricultural production has increased due to the establishment of irrigation systems. Multi-croppings are practiced and the processing of products at night is facilitated by the improved lighting system.

Simultaneous with the operation of the Misamis Oriental Electric Service Corporation was the introduction of the inexpensive and highly accessible FP services offered at local rural health clinics, established during the later months of 1972. At the start, an FP clinic was generally staffed by a doctor, a midwife, a nurse, a sanitary inspector, and recruited motivators. These motivators, utilized from 1972 to 1975, were later replaced by the municipal population officers. The number of personnel increased as the clinic offered such integrated services as nutrition, disease control, maternal child health, vital statistics, and environmental sanitation along with medical and nursing services. During the first year of operation, the Laguindingan Rural Health Clinic reported an average of five acceptors per month, which increased to eight acceptors by the second year and almost doubled during the third year when they averaged 17 acceptors per month. In spite of the good performance of the clinic in recruiting rural clients, the number of drop-outs for the pills and the IUD were equally substantial by an average of 26 percent annually for four years, 1972–1975.

Sampling

The sampling frame consisting of a list of 123 *sitio* with their corresponding population as of July 1975, was obtained from the Mindanao Center for Population Studies (MCPS). Out of this list, 24 *sitio* were picked as primary sampling units with probability proportional to size and without replacement.

The listing operation started with the interviewers' random assignment to a sample *sitio*. Every interviewer was equipped with a copy of the *sitio* map obtained from the MCPS. The map clearly indicated the boundaries of the adjoining areas as well as all dwelling units and buildings within the *sitio*. Interviewers were instructed to update the *sitio* maps, to enter new dwelling units, to cross-off houses no longer existing, and to indicate infrastructure recently established. For each household, interviewers asked the number of currently married women, 15 to 54 years old, the FP methods they had used, and the one they were currently using. Non-acceptors listed were those currently married women 15 to 54 years of age who were not practicing any method of contraception.

In the second stage of sampling which followed the listing process, a random selection of five IUD acceptors, five "other methods" acceptors, and five non-acceptors were picked from the list made for each *sitio* or clusters of *sitio* (clustering of *sitio* was imperative when the list did not yield enough numbers for each use-category). Hence, out of the 24 *sitio* picked in the first stage, the total was finally reduced to 18 *sitio* or clusters of *sitio*. Shaded portions in Map 2 are sample *sitio* or clusters of *sitio*. Therefore, in all, 270 women were drawn into the sample, 90 for each category of analysis, namely, IUD acceptors, "other methods" acceptors, and non-acceptors of the calendar year 1976.

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[2]A *sari-sari* store is a small neighborhood retail store.

Data Collection

An interview schedule was constructed in the English language based upon a designed chart depicting the flow of questions. The schedule was pre-tested by a supervisor for consistency and for further inclusion of relevant information, as well as detection of unnecessary questions. The English schedule was translated into the Visayan language and re-translated into English by another person to ensure that the meaning of each question was not lost by expressing it in the local dialect. The interview schedule was finalized after it was corrected and revised, taking into account any erroneous or defective flow of questions, any duplication of information which had already appeared in another section of the schedule, and any other deficiencies discovered during the pre-test.

After sample women were picked, the location of their residence in the *sitio* map was marked. This facilitiated the interviewing process, since the interviewer knew the exact location of the respondents. Proxy reporting was not allowed, so that interviewers made as many calls as were necessary. Another sample of women was drawn from the population, by a table of random numbers only, in the case of those who had migrated. As previously stated, a total of 270 women were interviewed, representing an equal number from each category of currently married women, namely, 90 IUD acceptors, 90 "other methods" acceptors, and 90 non-acceptors. Out of the 658 currently married women obtained through listing operations, one half were non-acceptors, 32 percent were using one of the modern contraceptives, and only 18 percent were IUD recipients. The 90 interviewed IUD acceptors represent about 75 percent of all IUD acceptors in the population, while the 90 acceptors of other FP methods represent 43 percent of that category. The 90 non-acceptors represent 28 percent of all non-acceptors in the population.

EFFECTS OF THE IUD ON THE FERTILITY OF RURAL WOMEN

The level of fertility in the study area, fertility and pregnancy rates by use-category, the number of children ever born, and number of pregnancies since acceptance are presented in this section.

Level of Fertility in the Study Area

Social scientists hypothesize that if the process of rural development is vigorously implemented so that the rural population experiences improved living conditions resulting in a progressively modernized way of life, such a development would affect people's attitude towards family size.

Fertility in the study area did not appear to have declined in the sample area before 1972 (Madigan 1976). From approximately 1960 to 1970, birth rates were recorded in the high 40's per thousand population. The year 1972 ushered in changes with the establishment of Rural Health Units providing FP services at very low cost, and with the establishment of an electric cooperative which has seemingly affected the rural way of life, as pointed out in the previous chapter.

The MCPS undertook a dual record project on two methodological areas: one rural and the other urban. The rural area is actually the entire study area referred to in this investigation. The span of the research observation started in the later part of 1971 (which coincided with the establishment of rural electric cooperatives) and ended in the first half of 1975. The dual record furnished a crude birth rate[3] of the study area as follows:

1971	1972	1973	1974	1975
45.8	43.8	38.6	31.4	29.9

[3]Rates refer to a six-month period only.

Obviously, level of fertility declined from the first half of 1971 to 1975. A 15.9 differential between the start of the observation period to the end of the research investigation warrants a closer look at the dynamics of the fertility decline. Local researchers at present cannot ascertain without further investigation whether the decline could be attributed to FP programs or to ongoing rural development experienced by the population in question.

The declining trend is further supported by the general fertility rates and the total fertility rates of currently married women 15 to 49 years of age as shown in Table 1. The consistent decline reflected by the two measures in Table 1 is impressive, especially when the population showed neither evidence of delayed marriage nor an increase in the proportion of those widowed or separated.

TABLE 1
General and Total Fertility Rates of Currently Married Women Aged 15 to 49 Years

Fertility Rates	1971 (1 Sept.-31 Dec. 1971)	1972*	1973*	1974*	1975 (1 Jan.-30 Jun. 1975)
General	353.1	334.3	293.7	234.7	224.0
Total	12,697.8	11,602.6	10,428.0	9,043.4	8,190.7

*Unweighted average of two six-month periods.

Fertility and Pregnancy Rates by Use-category

The decline in fertility can be attributed to several factors. However, the use and the non-use of contraception generally explained the differential in fertility as substantiated by various research findings. Comparison of fertility rates by different contraceptive use provides an analytical basis for policy formulation and pinpoints target populations for FP administrators.

General fertility rates by different use-categories computed for 1974 and 1975 are presented in Table 2. Clearly and not surprisingly, the non-acceptors had higher general fertility rates than the acceptors. Both the "other methods" acceptors and the non-acceptors registered an increase in 1975 while the IUD acceptors exhibited a decline. The overall fertility rate of 203.7 for 1975 was favorably close to the 1975 rate produced by the dual record. It is of interest to note that although the IUD users had a greater proportion of discontinuance (49 percent) than the "other methods" acceptors (40 percent), their number had still shown a decline. Oddly enough, the annual increment of the "other methods" rates was almost similar with the registered decrement of the IUD recipients. It is probable that the increased rates of 1975 may be due to sampling variability.

TABLE 2
General Fertility Rates by Different Use-categories, 1974 and 1975

Use-category	1974	1975
IUD acceptor	166.7	111.0
"Other methods" acceptor	155.6	211.1
Non-acceptor	233.3	288.9

The pregnancy rate is derived by computing the number of pregnancies since acceptance or insertion (for acceptors) over woman-months of use. For the non-acceptors, instead of using number of pregnancies since cohabitation, it was deemed better to limit the period of reference to the time simultaneous with the establishment of Rural Health Units which occurred during the last months of 1972. Therefore, the numerator of the rates for non-acceptors is the number of pregnancies since September 1972, over woman-months of exposure to risk of pregnancy. In the denominator, period of non-use, months of amenorrhea, and the inclusive period when husband was away were excluded. The pregnancy rates by use-category were 11.1 for IUD acceptors, 12.8 for "other methods" acceptors, and 34.8 for non-acceptors.

As expected, the non-acceptors showed a higher rate than both kinds of acceptors with 35 pregnancies per 1000 non-acceptors. The IUD users had a lower rate although when compared to acceptors of other contraceptive methods, the difference was not very significant. However, the acceptors' rates were remarkably lower than the non-acceptors, by almost one half.

Number of Children Ever Born and Number of Pregnancies Since Acceptance

The number of children ever born at acceptance dates and at interview dates are presented in the following section. A cursory look at the number of women by their parity at interview time, seemingly implies that the higher proportion of acceptors had more children than those who had never practiced FP and, therefore, use of contraception did not, in any way, contribute to fertility decline. However, examination of Table 3 reveals a different picture. Relating the number of women of particular birth orders at acceptance date, with the number of women of the same birth orders at interview date, gives us the magnitude of increase or decrease of the proportion of women between two reference points. For instance, the proportion of IUD acceptors with parity one to three at acceptance date was 34 percent, while the proportion of the same parity women at interview date was only 28 percent. Therefore, six percent of the IUD

TABLE 3
Percentage Distribution of Respondents by Use-category, and by Number of Children Ever Born at Acceptance Date and at Interview Date

No. of Children Ever Born (CEB)	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor*
At Acceptance Date			
0	0.0	0.0	30.0
1-3	34.0	40.0	27.0
4-6	39.0	36.0	20.0
7 and above	27.0	24.0	23.0
TOTAL	100.0	100.0	100.0
At Interview Date			
0	0.0	0.0	8.0
1-3	28.0	31.0	40.0
4-6	39.0	39.0	23.0
7 and above	33.0	30.0	29.0
TOTAL	100.0	100.0	100.0

*Number of children ever born to non-acceptors before September 1972.

users with one to three children at the time of acceptance had additional children in the span of the period from acceptance date to the interview date. The "other methods" acceptors, on the other hand, showed a nine percent differential in proportion of women with parity one to three between acceptance and interview dates.

The non-acceptors registered 30 percent of those with zero parity at the start of a reference period. (The start of the reference period was September 1972, the median month when FP clinics such as the Rural Health Units and the Institute of Maternal and Child Health clinics in the western section of Misamis Oriental were established.) Presumably, these women were newly married or were not yet married. The 30 percent zero parity women were reduced to only eight percent at interview time, while non-acceptors with parity one to three increased considerably by about one third of the non-acceptors of the same parity at interview date. The different use-categories exhibited similar patterns of increase or decrease in proportion of women of same birth orders between the reference periods, except for the non-acceptors with parity one to three. The proportion of acceptors of birth orders one to three showed a decline from acceptance to interview dates with "other methods" acceptors registering the highest percentage points decline. For higher birth orders, the proportion of women by different use-category increased almost uniformly within the period of reference.

The period of reference differed between acceptors and non-acceptors. For acceptors, it was the date of acceptance to the date of interview. As a check on whether or not September 1972 was a reasonable cut-off date for non-acceptors, the mean months of exposure to risk of pregnancy was compared to the mean months of IUD use and to the mean months of "other methods" use. The figures in Table 4 indicate the acceptability of September 1972 as a cut-off date for the non-acceptors. It must be recalled that months of method use (for acceptors) and months of exposure to risk of pregnancy exclude the inclusive period when the husband is away, period of amenorrhea, and period of discontinuance of a method.

TABLE 4
Percentage Distribution of Respondents by Use-category and by Mean Months of Contraceptive Use and Exposure to Risk of Pregnancy

Mean Months of Method Use/Exposure to Risk of Pregnancy	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor
Mean months of IUD use	30.0	—	—
Mean months of "other methods" use	—	23.4	—
Mean months of exposure to risk of pregnancy	—	—	32.9

Cross-tabulation of number of children ever born by age of respondents at date of acceptance indicated a greater proportion of IUD users aged 30 and above to be high-parity women at the time they accepted the method (Table 5). On the other hand, the IUD recipients below 30 years old, with one to three children were greater in number compared to those in the "other" use-categories. Four out of five zero parity non-acceptors were below 30 years old and 40 percent of the non-acceptors with three children or less were under 30. Since the fertility of these women contributes much to the general

TABLE 5
Percentage Distribution of Respondents by Number of Children Ever Born at Acceptance Date, and by Age at Acceptance

No. of CEB and Age at Acceptance Date	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor*
CEB: 0			
Below 30	0.0	0.0	24.0
30 and above	0.0	0.0	6.0
CEB: 1-3			
Below 30	33.0	29.0	16.0
30 and above	1.0	11.0	11.0
CEB: 4-6			
Below 30	12.0	13.0	1.0
30 and above	27.0	23.0	19.0
CEB: 7 and above			
Below 30	1.0	1.0	0.0
30 and above	26.0	23.0	23.0
TOTAL	100.0	100.0	100.0

*Number of children ever born to non-acceptors before September 1972.

fertility rate of rural women, more efforts of family planners must be directed towards these women.

Further analysis of the effect of IUD use on the fertility of rural women was done by the cross classification of number of children ever born at acceptance date by number of pregnancies since acceptance (Table 6). Examination of the data revealed "other methods" acceptors having the highest proportion of women with no pregnancies since acceptance, 82 percent compared to the 73 percent of the IUD acceptors, and to the 32 percent of the non-acceptors. Among the acceptors, the IUD users had a higher proportion of women (27 percent) experiencing one or more pregnancies since acceptance. In contrast, the "other methods" acceptors had only 18 percent of the women with pregnancies within the reference period. This fact seems to suggest that the "other methods" are more effective in preventing pregnancies. A closer look into the matter reveals that while the IUD acceptors had a greater proportion of women with pregnancies since acceptance, their total number of pregnancies was less compared to the total number of pregnancies experienced by the "other methods" acceptors. Furthermore, the mean months of contraceptive use was greater among the IUD acceptors than among the "other methods" acceptors.

More than three fifths of the non-acceptors had pregnancies since September 1972, with zero parity women at time of acceptance having the highest proportion. Most of these women had either one or two pregnancies within the reference period.

BACKGROUND CHARACTERISTICS

The respondents' background characteristics discussed in this section are the following: age, marriage duration, number of children ever born at acceptance date and at interview date, and education.

TABLE 6
Percentage Distribution of Respondents by Number of Children Ever Born at Acceptance Date, and by Number of Pregnancies Since Acceptance

Use-category and No. of CEB at Acceptance Date	No. of Pregnancies			
	0	1	2	3-4
IUD				
1-3 children	22.0	9.0	3.0	0.0
4-6 children	28.0	8.0	3.0	0.0
7 and above	23.0	3.0	1.0	0.0
TOTAL	73.0	20.0	7.0	0.0
"Other Methods"				
1-3 children	34.0	3.0	0.0	3.0
4-6 children	28.0	7.0	0.0	1.0
7 and above	20.0	2.0	0.0	2.0
TOTAL	82.0	12.0	0.0	6.0
Non-acceptor*				
0	6.0	15.0	8.0	1.0
1-3 children	10.0	3.0	11.0	3.0
4-6 children	8.0	8.0	4.0	0.0
7 and above	8.0	6.0	8.0	1.0
TOTAL	32.0	32.0	31.0	5.0

*Number of children ever born to non-acceptors before September 1972.

Age

The mean age of the 90 IUD acceptors was 33 years, slightly higher than that reported by various studies. India, for instance, had the mean age of 27 (Shastry 1976). Those who were below 30 years of age comprised 38 percent while almost two thirds of the acceptors were aged 30 and above (Table 7). Similar low percentages of the acceptors below 30 years old were found in Korea (25 percent) and in Taiwan (28 percent) (Berelson 1965), in contrast to a higher proportion of the IUD acceptors below 30 years old reported in Pakistan (52 percent) (Berelson 1965) and India (77 percent) (Shastry 1976).

An average "other methods" acceptor in the present sample had a mean age of 33 years, similar to that of the average IUD acceptor. Yet the young recipients under this use-category were fewer compared with the 38 percent of those in the IUD acceptor category. A higher proportion of the "other methods" acceptors were 30 years and above. Of these, 50 percent were in the 30 to 39 age category.

In comparison to both the IUD and the "other methods" acceptors, non-acceptors had a mean age of 32 years at the date of interview. A significant proportion of women under 30 years (41 percent) were non-acceptors. This figure was much higher than the corresponding one among acceptors for each use-category. The non-acceptors who were 30 years old and above were fewer compared to the IUD and the "other methods" acceptors in this age category.

Marriage Duration

In consonance with the relatively higher percentage of IUD recipients in their late reproductive ages, the mean years of marriage duration for this group was 13 years. The

TABLE 7
Percentage Distribution of Respondents by Age, and by Use-category

Age Group	Use-category		
	IUD Acceptor (n = 90)	"Other Methods" Acceptor (n = 90)	Non-acceptor (n = 90)
15-19	3.0	0.0	9.0
20-24	19.0	12.0	20.0
25-29	16.0	19.0	12.0
30-34	17.0	22.0	16.0
35-39	21.0	28.0	18.0
40-44	19.0	16.0	20.0
45-49	5.0	3.0	5.0
TOTAL	100.0	100.0	100.0
Mean	32.5	33.2	31.8

percentage distribution of respondents by use-category by years since marriage is shown in Table 8. It is interesting to note that slightly over one half of the IUD acceptors had been married for 13 years or more. The findings suggest that the IUD recipients were most likely high-parity women and, therefore, acceptance of the method was more for limiting the number of children they already had rather than spacing the number they were going to have.

The "other methods" acceptors exhibited a high mean years of marriage duration, too (12.7). However, slightly over one half of them had been married for less than 13 years. In fact, in this group the proportion married for 6 to 12 years was higher than those in either the IUD acceptor or the non-acceptor groups.

A differential of two years of marriage duration was seen between the IUD acceptors and the non-acceptors. About 40 percent of the currently married non-acceptors had been married for less than six years (this group had a modal marriage duration of two years). Apparently, these women did not feel the need for contraceptive use, having just started their married life. Compared to acceptors, the non-acceptors had a lower percentage of women who were married for more than 13 years.

TABLE 8
Percentage Distribution of Respondents by Use-category, and by Duration of Marriage

Duration of Marriage (years)	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor
Below 6	23.0	23.0	40.0
6-12	23.0	28.0	13.0
13 and above	54.0	49.0	47.0
TOTAL	100.0	100.0	100.0
Mean	13.4	12.7	11.4
Median	15.0	14.5	12.0

Number of Children Ever Born at Acceptance Date

Viewed against the number of children ever born (CEB) at date of acceptance (Table 9), a higher proportion of the IUD acceptors already had four to six children at the time of insertion. In fact, those with four or more children ever born comprised nearly two thirds (66 percent) of the sample IUD acceptors, and one third of this 66 percent belonged to the 30 to 39 age category. The young recipients, 15 to 24 years of age, with one to three children, comprised only 17 percent. The mean numbers of children ever born at acceptance date were nearly similar for both acceptors (4.8 for the IUD and 4.7 for the "other methods").

At the time of first acceptance of any method other than the IUD, an average "other methods" acceptor had five children. Table 9 shows that 40 percent of the "other methods" acceptors already had one to three children at first acceptance, while among the IUD acceptors only 34 percent had this number of children. The data indicates that the IUD was the choice of high-parity women, while other contraceptive methods seemed to appeal to both the low- and the high-parity women. Among the "other methods" users with one to three children at date of first acceptance, 72 percent were less than 30 years old, indicative of the fact that the young and low-parity recipients preferred other contraceptive methods to the IUD.

TABLE 9
Percentage Distribution of Acceptors by Number of Children Ever Born (CEB) at Acceptance Date

No. of Children Ever Born at Acceptance Date	IUD Acceptor	"Other Methods" Acceptor
0	0.0	0.0
1-3	34.0	40.0
4-6	39.0	36.0
7 and above	27.0	24.0
TOTAL	100.0	100.0
Mean	4.8	4.7

Number of Children Ever Born at Interview Date

The percentage distribution of respondents by number of children ever born at date of interview by use-category revealed that acceptors were high-parity women (Table 10). In fact, acceptors who had four or more children consisted of more than two thirds of each kind of acceptor group. A differential of 20 percentage points existed between the IUD receivers who had four or more children and the non-acceptors with the same number of children. Among the non-acceptors, 40 percent already had one to three children. The results of the Seven Province Survey, a research study undertaken by a consortium of three research institutions, the Population Institute of the University of the Philippines, Manila (UPPI), the Office of Population Studies of the University of San Carlos, Cebu City (OPS), and the Mindanao Center for Population Studies of the Research Institute for Mindanao Culture at Xavier University, Cagayan de Oro City (MCPS/RIMCU), showed larger percentages of women at high parities among FP acceptors in both Misamis Oriental and Southern Leyte (Madigan et al. 1976).

TABLE 10
Percentage Distribution of Respondents by Use-category and by Number of Children Ever Born at Interview Date

No. of Children Ever Born at Interview Date	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor
0	0.0	0.0	8.0
1-3	28.0	31.0	40.0
4-6	38.0	39.0	23.0
7 and above	34.0	30.0	29.0
TOTAL	100.0	100.0	100.0
Mean	5.2	5.2	4.5

The acceptors' mean number of children ever born was 5.2 compared with the 4.5 of the non-acceptors. It is not surprising that women never practising contraceptive use had a lower mean number of children ever born at time of interview, since a greater percentage of these women were below 30 years of age and had only one to three children.

Education

The distribution of respondents by their education showed that 50 percent of the IUD acceptors completed intermediate grades and about 30 percent had finished secondary and college levels. A slight variation in percentages existed among different educational group levels of the IUD acceptors. In the primary and intermediate categories, the "other methods" acceptors were fewer by 2 percentage points, but this group exhibited a slightly higher proportion of college graduates than both the IUD acceptors and the non-acceptors. The number who completed high school and college were probably the few whose families could afford to send them to city or municipal schools. Homogeneity among use-category, particularly acceptors, was evident as manifested by the almost similar percentages for each educational level (Table 11). The non-acceptors, on the other hand, showed a higher proportion of those who finished primary school than either of the acceptors, and a much lower percentage of those who finished high school and

TABLE 11
Percentage Distribution of Respondents by Use-category and by Education

Highest Grade Completed	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor
No grade	1.0	1.0	1.0
Primary	19.0	17.0	26.0
Intermediate	50.0	48.0	49.0
High school	24.0	24.0	22.0
College	6.0	10.0	2.0
TOTAL	100.0	100.0	100.0

college levels combined — a differential of ten percentage points from the "other methods" acceptors.

Various studies suggest that educational attainment has an effect on marriage behavior. In this study, examination of age at marriage at different educational levels showed patterns similar to the Philippine data (Concepcion and Smith 1977). Table 12 presents this finding in greater detail.

FACTORS RELATED TO IUD ACCEPTANCE

A key element in the success or acceptability of any particular method hinges on several factors which could trigger favorable attitudes towards the method. Knowledge of these factors may unveil relevant information necessary in the evaluation process.

TABLE 12
Percentage Distribution of Respondents by Use-category, by Educational Level, and by Proportion Married

Use-category and Educational Level	% Married		Median Age at Union	Mean Age at Union
	Below 20	20 and Above		
IUD Acceptor				
Primary	71.0	29.0	19.0	18.6
Intermediate	69.0	31.0	18.5	18.4
High school or college	41.0	59.0	20.7	21.0
"Other Methods" Acceptor				
Primary	60.0	40.0	18.5	18.8
Intermediate	49.0	51.0	20.5	20.0
High school or college	42.0	58.0	21.5	20.9
Non-acceptor				
Primary	61.0	39.0	19.5	19.1
Intermediate	70.0	30.0	21.0	19.0
High school or college	41.0	59.0	22.0	22.7

Decision on the Choice of IUD

Inquiry as to whether or not the method was a common choice between husband and wife resulted in 94 percent of the 90 IUD acceptors responding "yes," while the remaining six percent chose the method by themselves. The average duration of use (Table 13) of those who chose the method without the husband's approval was only nine months compared to almost two and a half years for the joint acceptors, i.e., husband and wife jointly deciding to accept the device. Noteworthy is the fact that women who had chosen the IUD without the husband's consent had a higher mean age and higher mean number of children ever born than women whose choice of the method was in concurrence with the husband's preference, too. Closer examination of the former revealed that they all had had the device removed, yet neither complaints nor reasons for

TABLE 13
Distribution of IUD Acceptors by Responses to Decision on Choice of the Method, by Average Duration of IUD Use, by Number of Children Ever Born, and by Age at Interview

Demographic Characteristic	Decision on Choice of the IUD	
	Joint Decision (Husband & Wife)	Wife's Decision Only
Total no. of acceptors	85	5
Average duration of use (months)	29.4	8.7
Average no. of children ever born	5.2	6.2
Mean age at interview	32.6	35.0

removal were given. Presumably, these older high-parity women desired so much to limit the number of children that they accepted a method which might be contrary to the husband's preference.

Joint acceptors of the IUD had a lower average number of children ever born and a lower mean age. In fact, 35 percent of these joint acceptors had only one and three children. Evidently, the use of the IUD as a common choice between husband and wife was prevalent among joint acceptors. Sixty percent of these joint acceptors were aged 30 years old and above, while only 39 percent were below 30 years of age.

Reasons for Choice of the IUD

The method was chosen primarily because respondents believed it was reliable and effective (Table 14). Next in rank among reasons given were convenience in the IUD use and the fact that the method was recommended by the medical and paramedical people. Presumably the latter reflected the influence of an authority figure upon decision-making by the couple. Lynch (1964) has pointed out the striking Filipino quality of *pakikisama*, which is employed to obtain smooth interpersonal relations, considered very important by Filipinos. Rural folks look upon the medics and the paramedics as persons of authority

TABLE 14
Percentage Distribution of IUD Acceptors by Reasons for Choice of the Method and by Sources of Information

Reason for Choice of IUD	Acceptors		% of IUD Acceptors by Sources of Information			
	No.	%	Doctors/Nurses/ Motivators	Relatives & Friends	Religious Groups	Mass Media
Convenient and economical	18	21.0	67.0	17.0	6.0	10.0
Reliable/effective	31	34.0	48.0	45.0	3.0	3.0
Recommended by doctors/nurses/ motivators	19	21.0	89.0	11.0	0.0	0.0
Others	20	22.0	75.0	20.0	0.0	5.0
No response	2	2.0				
All reasons	90	100.0	67.0	26.0	2.0	5.0

and would always maintain smooth interpersonal relationships with them. Another study in Bali (Astawa, Waloeyo, and Laing 1975) has shown how persons of authority influenced the choice of the contraceptive method. This study reported that preference of the IUD was the result of the concerted efforts of program administrators and clinic personnel to promote the device. In fact, during training, fieldworkers were told to devote special attention to the IUD and to provide information about the method. Clinic personnel recommended the IUD above other methods and encouraged continuation among the IUD users who were considering removal or switching to other methods.

In the present study slightly over one fourth of the IUD acceptors gave "other" reasons which include: desire to experiment as to whether or not the method would be good for them, absence of any other choice, persuasion by friends and relatives to use the IUD on the belief that the method is more appropriate for lactating mothers, and consideration by women with varicose veins.

Cross-tabulation of reasons for the choice of the IUD by sources of information (Table 14) revealed that 67 percent of the IUD acceptors derived general knowledge about the method from the medical and paramedical team; 28 percent obtained this information from relatives, friends, and religious groups. The remaining five percent named the mass media as their source of information. Of the various reasons given, the pattern prevailed, namely, the greater proportion of IUD acceptors derived information about the method from the medical team. Oddly enough, only a small proportion of IUD acceptors were informed about the method through the mass media.

An examination of the reasons for the choice of the IUD in relation to the number of children ever born (Table 15) showed that the low-parity acceptors, those whose number of children fall between one and three, were equally influenced by doctors and motivators as to the reliability or effectiveness of the method. Among those acceptors who had four to six children, the main reason for the choice of the IUD was the effectiveness and reliability of the method. A substantial proportion, however, gave "other" reasons. Higher-parity women, comprising 32 percent of the total IUD acceptors, were almost equally distributed among the different categories of reasons given. Slightly over one fourth of these high-parity women chose the IUD primarily because it was convenient and economical to use.

Usual Complaints about the IUD

Of major relevance to the evaluation are answers to the questions: What are the

TABLE 15

Percentage Distribution of IUD Acceptors by Number of Children Ever Born and by Reason for Choice of the IUD Method

Reason for Choice of IUD	No. of Acceptors	No. of Children Ever Born		
		1-3	4-6	7 and Above
Convenient/economical	20.0	28.0	8.0	28.0
Reliable/effective	34.0	32.0	44.0	24.0
Recommended by doctors/ motivators	21.0	32.0	14.0	21.0
Others	22.0	8.0	31.0	24.0
No response	2.0	0.0	3.0	3.0
No. of respondents	(90)	(25)	(36)	(29)

complaints, real or perceived, of the IUD recipients? Who are those who have complaints and what are their characteristics?

Surprisingly, more than one half (52 percent) of the 90 IUD acceptors had no complaints at all (Table 16). The modal characteristics of non-complainants are as follows: generally composed of acceptors aged 30 years and above (about two thirds of this group); almost one half had finished intermediate grade; slightly over two thirds had four or more children. A substantial proportion of them retained the method for a longer duration compared to acceptors who had complaints. A differential of about nine months in the average duration of IUD use could be seen between complainants and non-complainants.

The complainants comprised 48 percent of all IUD acceptors. In comparison to non-complainants, there was a greater proportion of women whose ages were less than 30 years among the complainants. There was also a lesser number of those who only finished primary grade and a substantial proportion of women having four or more children. It was not surprising for this type of acceptor to have a lower mean months of IUD use as they probably had discontinued use.

The most frequently mentioned complaint (49 percent) was lower abdominal pain similar to normal dysmenorrhea. Several studies (Shastry 1976; Vimuktanon et al. 1971;

TABLE 16
Percentage Distribution of Complainants and Non-complainants by Age, by Education, by Number of Children Ever Born, and by Duration of Use

Characteristic of IUD Acceptors	Complainants	Non-complainants
Age Group		
Below 30	42.0	34.0
30 and above	58.0	66.0
Mean Age	32.1	33.4
Highest Grade Obtained		
Primary	16.0	23.0
Intermediate	51.0	49.0
High school	28.0	21.0
College	5.0	7.0
Mean Grade	6.6	6.4
No. of CEB		
1-3	23.0	32.0
4-6	44.0	32.0
7 and above	33.0	36.0
Mean CEB	5.3	5.2
Duration of Use (months)		
Below 12	28.0	26.0
12-24	30.0	6.0
25-36	14.0	13.0
37 and above	28.0	55.0
Mean Use Duration	23.7	32.6
No. of respondents	(43)	(47)

Population Reports 1975) reported the same findings, namely, a greater number of IUD recipients complained about lower abdominal pain. Next in rank of complaints was bleeding and spotting which comprised 32 percent, while the remaining "other" complaints (19 percent) included increased nervousness, unusual white discharge, loss of weight, painful urination, and itchiness of the vaginal canal.

FACTORS RELATED TO CONTINUANCE AND DISCONTINUANCE OF USE

The following factors are discussed in this section: age and number of children ever born, education, duration of IUD use, reasons for the choice of the IUD, usual complaints of discontinuers, frequency of medical check-ups, age at first marriage, and husband's occupation.

Age and Number of Children Ever Born

Removal and expulsion were the main causes of discontinuance. Three percent of the acceptors reportedly got pregnant with the IUD supposedly in place, while 46 percent of the total acceptors either had expulsions or removals.

The mean age at insertion date of those who discontinued was lower than those who were continuing users (Table 17). Viewed at a different point of time (date of interview and date of insertion), those who discontinued use due to expulsion registered lower mean ages than the other categories of discontinuing users. Congruent to the lower mean ages of discontinuers was the fact that a greater proportion of this group were below 30

TABLE 17
Percentage Distribution of IUD Acceptors by Status of Use, by Age, by Education, and by Number of Children Ever Born

Characteristic of IUD Acceptors	Continuing Users	Discontinuers			
		Total	Removal	Expulsion	Pregnancy*
Age Group					
Below 30	30.0	45.0	44.0	57.0	—
30 and above	70.0	55.0	56.0	43.0	—
Mean Age at Interview	33.5	32.0	33.0	29.0	37.0
Mean Age at Insertion	30.0	29.0	28.9	26.0	32.0
Highest Grade Obtained					
Primary	24.0	16.0	14.0	21.0	—
Intermediate	43.0	57.0	52.0	58.0	—
High school	24.0	25.0	30.0	21.0	—
College	9.0	2.0	4.0	0.0	—
Mean Grade	6.6	6.4	6.6	5.6	5.6
Number of Children Ever Born					
1-3	30.0	27.0	26.0	36.0	—
4-6	40.0	34.0	30.0	43.0	—
7 and above	30.0	39.0	44.0	21.0	—
Mean CEB	5.0	5.4	5.9	4.0	7.3
No. of respondents	(46)	(44)	(27)	(14)	(3)

*No distribution into different sub-categories because of few cases.

years of age. In fact, over one half of those who had expulsions were young, not exceeding 30 years of age.

A comparison of the number of children ever born between continuing users and those who discontinued showed a slightly higher mean for the latter. However, among those who had discontinued, those who had had expulsions registered the lowest mean number of children ever born.

Education

Continuing users were slightly better educated than the discontinuers. One third of the former were either high school or college graduates while almost three fourths of those who discontinued had finished intermediate or primary education. Among the discontinuers, those who had removals were better educated than those who had expulsions.

Duration of IUD Use

As to be expected, acceptors who discontinued use had lower mean months of IUD use (Table 18). In fact, a differential of almost eleven months existed between continuing users and discontinuers. More than one half of the continuing users retained the device for three years or more while half of those who had had expulsions had less than a year of use.

TABLE 18

Percentage Distribution of IUD Acceptors by Status of Use, by Duration of Use, by Reason for the Choice of IUD, and by Complaints

Status/Duration of Use and Reason for Choice of IUD	Continuing Users	Discontinuers			
		Total	Removal	Expulsion	Pregnancy*
Duration of Use (months)					
Below 12	22.0	32.0	22.0	50.0	—
12-24	15.0	25.0	37.0	7.0	—
25-36	6.0	16.0	15.0	14.0	—
37 and above	57.0	27.0	26.0	29.0	—
Mean	33.3	22.6	23.4	21.0	22.0
Reason for Choice					
Convenient/economical	28.0	11.0	11.0	14.0	—
Reliable/effective	37.0	32.0	26.0	36.0	—
Recommended by doctors/motivators	15.0	27.0	30.0	29.0	—
Others	20.0	30.0	33.0	21.0	—
Complaints					
Off-and-on bleeding	13.0	20.0	26.0	14.0	—
Pain in the lower abdomen	18.0	32.0	41.0	21.0	—
Headache/nervousness	2.0	2.0	3.0	0.0	—
No complaints	63.0	41.0	26.0	57.0	—
No.of respondents	(46)	(44)	(47)	(14)	(3)

*No distribution in different sub-categories because of few cases.

Reason(s) for the Choice of the IUD

Ironically enough, almost one third of the discontinuers chose the method because they believed it to be reliable and effective. A substantial proportion of continuing users also gave the same reason. However, a comparison of the two groups, continuing users and discontinuers, showed that more of the former chose the method because it was convenient and economical to use, while more discontinuers accepted the method because it was recommended by doctors and motivators.

Usual Complaints of Discontinuers

As mentioned earlier, nearly one half (49 percent) of the IUD recipients discontinued use. Of these, 61 percent had the device removed because of complaints related to lower abdominal pain and the off-and-on spotting and bleeding they had experienced.

Nearly three fifths of the discontinuers gave complaints related to IUD use (Table 18). Almost one third of them complained of lower abdominal pain. Next in the list of complaints was the off-and-on bleeding recipients had experienced. In contrast, slightly over three fifths of continuing users had no complaints; those who did gave similar complaints.

Frequency of Medical Check-ups

Were women who seldom submitted to medical check-up since insertion prone to discontinue? Or, is the frequency of the check-up related to education?

Generally, a doctor is needed to implement removal. Very often, a woman (particularly if she is the better educated type) who has the intention of having a removal may be dissuaded from doing so if the doctor allays her fears by some trenchant medical explanations. But some will insist on the removal of the device despite these explanations and the assurances.

Examination of the frequency of medical check-ups by education (Table 19) revealed that acceptors, regardless of educational attainment, submitted themselves to a medical check-up twice or more in a year. However, the discontinuers with primary or intermediate education showed a higher proportion of those who had medical check-ups twice or more in a year compared to continuing users. A considerable proportion among

TABLE 19
Percentage Distribution of IUD Acceptors by Status of Use, by Education, and by Frequency of Medical Check-ups

Education and Frequency of Check-ups	Continuing Users	Discontinuers		
		Total	Removal	Expulsion and Pregnancy
Primary or Intermediate				
No check-up	7.0	7.0	0.0	18.0
Once	13.0	7.0	7.0	6.0
Twice or more	48.0	59.0	59.0	58.0
High School or College				
No check-up	4.0	2.0	4.0	0.0
Once	4.0	0.0	0.0	0.0
Twice or more	24.0	25.0	30.0	18.0
TOTAL	100.0	100.0	100.0	100.0
No. of respondents	(46)	(44)	(27)	(17)

those who had expulsion had not submitted to a medical check-up probably because the device was expelled a few days after insertion.

Age at First Marriage

Evidence of youthful marriages was consistent for all use-categories among the lower educational levels. Of those who finished intermediate grades, the proportion of those who married under 20 years old was similar for the IUD acceptors and the non-acceptors (69 and 70 percent, respectively), while "other methods" acceptors of the same educational level comprised only 49 percent. Median age at first marriage showed a consistent trend among use-categories, namely, an increasing age at first marriage for women of higher educational levels. Noteworthy is the differential of 1.3 years in the median age at marriage seen between the non-acceptors and the IUD acceptors, and a slightly higher median age for "other methods" acceptors.

TABLE 20
Percentage Distribution of Respondents by Use-category and by Husband's Occupation

Husband's Occupation	Use-category		
	IUD Acceptor	"Other Methods" Acceptor	Non-acceptor
Professional and administrative	2.0	3.0	0.0
Clerical	2.0	2.0	0.0
Sales	2.0	4.0	2.0
Farming and fishing	73.0	77.0	87.0
Miners, loggers and related workers	2.0	1.0	1.0
Transportation	9.0	0.0	0.0
Craftsmen	9.0	10.0	6.0
Service/sports and related workers	1.0	3.0	4.0
TOTAL	100.0	100.0	100.0

Husband's Occupation

Husbands' occupations were categorized into eight classes: professional and administrative; clerical; sales; farming and fishing; miners, loggers and related workers; transportation workers; craftsmen; and service/sports or related workers.

It was not surprising that the greater proportion of husbands were engaged in fishing and farming as the locale of the research study was a rural area. However, the data showed that while there were no white-collar workers among the non-acceptors, the proportion engaged in farming and fishing was far greater in this group than that of the acceptors. The percentage of farmers and fishermen was lowest among the husbands of the IUD users who were also the only use-category that had a certain percentage of husbands engaged in transport work.

SUMMARY OF FINDINGS

The present study was an attempt to demonstrate the differentials in IUD use as well as the effects of the method on the fertility of the rural women. A substantial body of experience with the IUD exists. However, it is recognized that on the local level, scant information is available on the IUD, especially information relating to characteristics and patterns of IUD acceptance.

To achieve the research objectives, the study focused on three types of respondents, namely, IUD acceptors, "other methods" acceptors, and non-acceptors. Comparisons were made between the different use-categories in terms of their socio-economic and demographic characteristics, as well as their fertility.

Effects of the IUD on the Fertility of Rural Women

The overall general fertility rate of the sample women (203.7) for 1975 was favorably close to the 1975 rate produced by the dual record project of the Mindanao Center for Population Studies. The fertility rates of acceptors for 1974 and 1975 were much lower than the non-acceptor rates for the same calendar years. IUD users showed a fertility decline in 1975 while users of the "other methods" registered an upswing from the rate of the previous year.

The pregnancy rates of acceptors were remarkably lower than those of the non-acceptors. The IUD users had the lowest rate (11 pregnancies per 1000 IUD users) compared with those in the other use-categories. Understandably, non-acceptors registered a higher rate, 35 pregnancies per 1000 non-acceptors.

Relating the number of women of particular birth orders at acceptance date with the number of women of the same birth orders at interview date, we find the magnitude of increase or decrease in the number of the women who contributed to the birth rate between two reference points. The number of acceptors (both the IUD and the "other methods") with one to three children at time of acceptance was reduced by about eight percentage points at interview time. This proportion represents the number of women who had additional births and, therefore, had been added to the number of women in the higher birth orders. Considerable increase in the proportion of non-acceptors with one to three children at the start of the reference period to the interview date was observed. For higher birth orders, the pattern of increase in proportion of women was similar for different use-categories, with IUD users exhibiting the least proportion of increase.

Cross-classification of number of children ever born at acceptance date, by number of pregnancies since acceptance, showed a considerably higher proportion of acceptors with no pregnancies since they accepted a method. Among the acceptors, the IUD users had a higher proportion of women (27 percent) experiencing one or more pregnancies since acceptance. In contrast, the "other methods" acceptors had only 18 percent of women having pregnancies within the reference period. Although the IUD recipients had a greater proportion of women with pregnancies from time of acceptance to the interview date, their total number of pregnancies was less compared to the number of pregnancies the "other methods" acceptors had. Furthermore, the IUD acceptors had a greater mean months of IUD use than the "other methods" group.

A little less than one third of the non-acceptors had no pregnancies and a substantial number had either one or two pregnancies within the reference period.

The limited data tend to suggest that acceptors had lower fertility than non-acceptors. The IUD users seem to have a slightly lower contribution to fertility than the other methods of contraception taken all together. Admittedly, the fertility of non-acceptors, particularly the young age group, contributed much to the birth rate of the rural area. These are the women who need to be reached and motivated to accept a method of contraception.

Background Characteristics

The mean age of 33 years was similar for both types of acceptors, i.e., the IUD acceptors and the "other methods" acceptors. The non-acceptors had a slightly lower mean age (32 years) at the date of interview. All use-categories had a greater proportion of women 30 years old and over (62 percent, 69 percent, and 59 percent for the IUD acceptors, the "other methods" acceptors, and the non-acceptors, respectively).

The acceptors had a similar mean years of marriage duration. In contrast, the non-acceptors had a slightly lower mean. While it is true that the IUD acceptors and the "other methods" acceptors had similar mean years of union (13 years), the proportion of IUD acceptors who had been married for 13 years and more was greater by five percentage points. A differential of two years of marital union was seen between acceptors and non-acceptors.

The data on number of children ever born at acceptance date showed that acceptors were already of high parity when they accepted the method. This finding seems to suggest that the respondent's use of contraceptives was more for limiting the number of children they already had rather than spacing the number of their children. The distribution of the proportion of women by their birth orders at time of acceptance tends to demonstrate that the "other methods" are the preference of the young and the low-parity women, while the IUD appeals to the older high-parity mothers.

Viewed at interview date, the average IUD acceptor had five children, slightly higher than that reported for Thailand and Taiwan. Compared to the IUD users, the "other methods" group had a similar number of children, while the non-acceptors had a slightly lower number of children ever born.

Almost one half of the respondents had completed intermediate grades. The data tend to show that acceptors were better educated than non-acceptors. A little over three fourths of the non-acceptors had finished only either primary or intermediate grades. Data on age at marriage by different educational levels indicate youthful marriages among the lower educational levels. The non-acceptors with either a high school or college education had a higher mean age at union compared with their counterparts among the acceptors.

A greater proportion of husbands were engaged in farming and fishing. More than four fifths of non-acceptors' husbands were either farmers or fishermen, while three-fourths of the acceptors' husbands belonged to the same occupational category.

Summing up the findings on demographic and socio-economic characteristics, there seems to be no significant differences between the IUD acceptors and the "other methods" acceptors. However, at time of acceptance, more women with parity four and above chose the IUD rather than other methods of contraception. Demographic and socio-economic differentials exist between acceptors and non-acceptors although the difference is not remarkable.

Factors Related to IUD Acceptance and Discontinuation

Generally, preference of the IUD was a joint decision of husband and wife. The proportion of women who chose the IUD without their husband's approval was insignificantly small. Nevertheless, they showed interesting characteristics in that they retained the device for a very short duration and never attempted reinsertion nor did they shift to other methods.

Convenience was the main reason given for choosing the IUD method. A substantial number of IUD acceptors said that the choice of the method was determined by medical and paramedical people. "Other" reasons for the choice of the method included: the influence of friends and relatives, the belief that IUD is good for lactating mothers as well as those with varicose veins, and the absence of other methods from which to choose.

More than one half of the IUD acceptors had no complaints at all. The modal description of the non-complainants was as follows: generally composed of acceptors 30 years old and above, had finished intermediate grades, and had four to six children. The results seemingly indicate that older high-parity women had no complaints since they most likely ignored any psychological discomforts they may have experienced as a result of the IUD. On the other hand, complainants were low-parity women aged 30 and above, with intermediate schooling. The most frequently mentioned complaint was lower abdominal pain similar to normal dysmenorrhea. Other complaints included

bleeding and spotting, increased nervousness, loss of weight, and unusual discharges.

Discontinuance of IUD use was mainly due to expulsion and removal. Those who discontinued use due to expulsion were young, low-parity women having three children, while those who had the device removed were older high-parity women. This result supported earlier findings of Tietze and Lewitt (1970) associating expulsion to age and parity. Complaints of those who discontinued use were mostly discomforts associated with side-effects (loss of weight, nervousness, gastric pain, etc.). Ironically enough, among those who had expulsion, the reason for the choice of the method was its reliability while among those who had removals, the method had been recommended by doctors and motivators.

Examination of the frequency of medical check-ups by education, of all the IUD acceptors, revealed that women with high school and college education showed greater preponderance for a frequent check-up, usually four times or more in a year. On the other hand, among those who discontinued use by removals, the intermediate graders were most conscious of frequent check-ups, with a 12 percentage point differential from the high school or college educated.

POLICY IMPLICATIONS AND RECOMMENDATIONS

Consistent with the findings of studies conducted in other countries, the results of this investigation confirmed some principal conclusions about socio-economic differentials between acceptors and non-acceptors. The limited data tend to show that acceptors were better educated than non-acceptors. It may prove useful for planners to further examine the existing rural situation and to determine whether adult education with particular reference to population may lead to a sustained change of attitude towards FP.

In line with the objectives of the Commission of Population Outreach Program, the findings may also contribute significantly in the understanding of why people accept or reject contraception. Motivators, medics, and paramedics seem to play an important role in promoting IUD use. A substantial number of the IUD acceptors had accepted the method mainly because it was recommended by medical people. It would be worthwhile, then, to further investigate what persuasive approach they used which triggered the acceptance of the method. The present study has shown that those who discontinued use by removals had accepted the device because that was what the doctors and motivators had recommended. As such, better results may be consistently achieved if these medical people persuade IUD acceptors seeking removals to retain the device and at the same time, to allay their fears regarding adverse side effects. It must be recalled that complaints of drop-outs were mostly discomforts which might not in reality be caused by the device. More efforts on the part of doctors and motivators in giving assurance to counter the fear of adverse side-effects may lead to a reduction in the rate of discontinuance.

Assessments of the consequences of IUD use for fertility among rural women are necessary not only for evaluation, but also for effective action in promoting IUD use among the currently married women in the rural areas. Non-acceptors in the population of this study comprised one half of all currently married women. Admittedly, the contribution of the non-acceptors to the birth rate of the rural areas was far greater than the contribution of the drop-outs and all the others combined. The FP administrator must, therefore, direct his attention toward the rural non-acceptors and must ascertain how they could be motivated to accept a method. The fertility of the IUD acceptors was lower in comparison to the fertility of the acceptors of other methods of contraception taken all together, although the difference was not significant. It might be a step in the right direction for planners to give a serious thought to the rural dwellers' contraceptive preferences and to initiate studies to determine whether or not these preferences will lead to cost-reductions in terms of medical services, motivation, and follow-ups.

AN EVALUATION OF THE IMPACT OF FAMILY PLANNING INPUTS PROVIDED BY THE NATIONAL FAMILY PLANNING PROGRAM OF THAILAND ON MARRIED COUPLES IN NAKORN SAWAN

Promboon Panitchpakdi

According to the census made in 1970, Thailand's population has increased to 34.2 million — four times the population of the country when the first national census was taken in 1910. The population figures also show that Thailand's population is growing at an increasing rate, and it would appear that such a trend will continue in the future with an annual growth rate of over three percent. The results drawn from past national censuses (Osathanon 1976) are shown Table 1.

The figures in Table 1 show that from 1910 to 1933 the population increased by 100 percent. From 1947 to 1970 the same rate of growth is seen. However, from 1910 to 1970 the growth rate was about 400 percent.

Population growth in Thailand was, in the past, overlooked as it was thought that a country of approximately 514,000 square kilometers would allow for population growth. In fact, Thailand had a pro-natalist policy and it was only in 1970 that the Thai Cabinet approved a population policy with growth control components (Kanchanasinith 1973).

The rationale behind the policy was that a population growth rate of three percent per annum for Thailand would be a major obstacle to accelerated national development. The policy was supported by research studies and pilot projects undertaken by many organizations.

TABLE 1
Population of Thailand: Results of Censuses Made from 1910 to 1970

Year	Population (millions)
1910	8.2
1919	9.2
1929	11.5
1933	14.5
1947	17.5
1960	26.3
1970	34.2

THE NATIONAL FAMILY PLANNING PROGRAM

The 1970 population policy led to the establishment of the National Family Planning Program (NFPP) under the Ministry of Public Health. The Ministry was already conducting a pilot project on family planning (FP) and was, therefore, ready to undertake the National Family Planning Program. The NFPP has five functions:

1. To provide birth control services to the public through the existing health service outlets;

2. To inform and educate the public about FP;
3. To train health personnel in FP and contraception;
4. To conduct research and to evaluate the various related factors of the program; and
5. To monitor the program and coordinate its activities with other allied agencies.

The NFPP has been worked out in five-year plans, according to the National Economic and Social Development Plan. During the Third Plan, which was from 1972 to 1976, the NFPP set about to reduce the national population growth rate from over three percent per annum to 2.5 percent per annum. The present five-year plan — the Fourth National Economic and Social Development Plan — states that the population growth rate is to be further reduced from about 2.5 in 1976 to 2.1 percent per annum by 1981, the end of the Fourth Plan (NFPP n.d.). To achieve these targets, a very effective program had to be devised and services had to be made readily available to the people. At the same time, publicity and public education programs had to be implemented.

Information, Education, and Communication Activities

One of the problems faced by the NFPP in its early stages, before 1972, was that it was prohibited from carrying out any information, education, and communication (IEC) surveys. The reason for this was probably because FP was a very new subject and that if it was introduced on too large a scale, it was thought that it may result in negative effects on the public. Also, many of the pilot projects before 1970 showed that public acceptance could be gained without any motivation campaigns. These pilot projects indicated that people would accept FP services because they had heard about them from others. Face-to-face communication was found to be sufficient to win the public's support in all parts of the country, and good use was being made of the services at the small number of service outlets then available. It was believed that there were two reasons for this initial success of the program. First, there was an initial rush of women. Some were waiting to learn where the services could be obtained; some did not know if the service would continue indefinitely (World Bank 1975). Second, there was a very limited number of service outlets. The demand was therefore greater than expected.

When the government adopted the population policy in 1970, the Ministry of Public Health, with the assistance of the Development Support Communication Service (DSCS) of the United Nations Development Program (UNDP), launched a six-month Family Planning Mass Communication Project in Khon Kaen, a province in northeastern Thailand. This area already had FP services when the project was introduced. The new mass communication pilot project made use of all the available media, i.e., radio, TV, pamphlets, and a mobile cinema van which was fully equipped with audio-visual equipment and materials. The project was very successful and the number of people who accepted FP doubled. Equally important were the evaluation results of the different types of media and the measurement of their impact.

The Family Planning Communication Development and Integrated Campaigns

Following the pilot project in Khon Kaen, the NFPP with the assistance of the DSCS, designed a three-year IEC project which would receive financial assistance from UNDP. Entitled "Family Planning Communication Development and Integrated Campaigns," the Project consisted very largely of motivational and educational activities. Actually, the Project covered almost all of the IEC activities of the NFPP.

The Project ran from 1973 to 1975 and was based on the Khon Kaen study. The objectives of the Project are shown below:

1. To further the aims and functions of the NFPP through the production and dissemination of orientation materials about the population dynamics of Thailand and about the NFPP;

2. To produce and disseminate motivation information materials to the remote rural areas through mobile units as well as through the mass media so as to encourage the adoption of FP practices and to use the services that were available;
3. To produce and sustain the use of the materials for all aspects of training health personnel in the processes of FP and related development work;
4. To develop training methods with supporting aids in the fields of motivation and information for all health field staff to ensure long-term communication support for FP;
5. To assist in the development of skilled personnel resources by providing audio-visual equipment to the Information and Training Unit of NFPP and to enable it to provide integrated communication support for all other components of the NFPP needing such support, including all other UNFPA-assisted activities;
6. To develop an integrated multi-sector approach to FP communication by the coordinated use of all possible channels and services whose activities are related;
7. To integrate the research techniques of the project in order that baseline data could be obtained, materials pre-tested, and feedback systems established, so that evaluation of the project may be carried out at appropriate stages; and
8. To coordinate the Project with all other UNFPA projects and all other FP activities, especially those of the Planned Parenthood Association of Thailand.

These objectives were used in the first nationwide IEC campaign on FP conducted by the Information and Public Relations Section of the NFPP. This Section, with the cooperation of DSCS, was directly responsible for planning the implementation of the project, preparing the materials and personnel for motivation or training activities, conducting activities through mass media channels and by training health personnel to carry out person-to-person motivation, and carrying out follow-up, evaluation, and research activities.

The Target Population

The NFPP had as its main target population eligible women or couples. Special emphasis was made on eligible couples in rural areas since they were the majority population and since it was considered that the rural population would need more motivation and services than the urban population. However, the targets of IEC activities included a much larger group of people.

Many of the target populations were only mildy affected by the actual implementation of the program. Furthermore, many of the groups were reached by mass media, whose messages were not directed at any one group in particular. This was most likely a result of the NFPP's limited resources which had to be directed according to priority needs, i.e., training of health personnel and motivation of the population in the fertile age.

The Strategy of the Family Planning Communication Development and Integrated Campaigns Project

The Family Planning Communication Development and Integrated Campaigns (FPCDIC) Project was planned such that most of its attention would be directed at the rural population (Development Support Communication Service n.d.: 2). The activities were to be focused initially on the northeastern region of Thailand[1] for two reasons: the pilot study was made there and population pressure was highest there. In 1973, its first year of operation, the Project's activities included the training of health personnel and the use of four mobile audio-visual units to support the training. In four provinces,

[1]Geographically Thailand is divided into four regions, i.e., northeast, north, central, and south. The number of provinces in each is 15, 16, 27, and 13, respectively.

special attention was given to the Maternal and Child Project. Other activities during the year involved preparing staff and getting the motivation material ready.

In the Project's second year (1974), five more mobile teams were included to facilitate the training of health personnel in the northern, central, and southern regions. Two of the mobile units were to be used for community-level information and motivation activities. Radio programs as well as film strips were used in the northeast. Printed matter and other motivation materials were also distributed.

In the third year, all of the mobile units concentrated on community-level information/motivation activities with periodic breaks for the training of health personnel. The training of field health personnel expanded to cover 70 provinces (excluding Bangkok). Motivational films and printed matter were distributed in all provinces. Radio programs increased in number to cover the whole country.

The FPCDIC Project also included the recruitment of a central staff and the training of this staff to carry out the various tasks in the Project. These included on-the-job training, study tours abroad, and training in the procurement and installation of equipment.

In 1976, the Project was in operation all year, since many of the activities had not yet been completed, and also because the Project was to end promptly with the Third National Economic and Social Development Plan of the country (UNFPA n.d.: 1).

The National Family Planning Communication Support Program

After 1976, a smiliar project was designed to operate from 1977 to 1978[2] with continued assistance from the UNFPA. This project was titled "National Family Planning Communication Support Program." It aimed at strengthening the infrastructure of the Information and Public Relations Section and at creating encouraging intersectorial cooperation with other organizations. At the same time, the FPCDIC Project was to continue with its ongoing activities, to design and implement communication programs, and to evaluate the effectiveness of the communication input.

With regard to motivation activities, the Information and Public Relations Section had a very important role to play as it was previously stated that "... the I & PR Section will have the responsibility of designing and producing the teaching materials (both face-to-face teaching and self-instruction) for all these training programs." In addition the I & PR Section had the following responsibilities.

> To complement the overall NFPP service and training program the I & PR Section will be responsible for designing, producing, and distributing motivational materials (mass media and motivational aids) for the field staff utilization. Special emphasis will be put on the development of motivational programs aimed at *improving continuation* rates of acceptors, shifting acceptors to *more reliable and permanent contraceptive methods*, reaching new *target groups*. Communication support will also be given to new motivational campaigns such as encouraging mothers to *breast feed* for improved nutrition and birth control, mother and child health practices, *population education activities in and out of school*, and programs in factories. (UNFPA n.d.)

It was, therefore, expected that in the future the IEC activities of the NFPP would be more oriented towards developing activities specific to the target groups. The NFPP had identified 15 special target groups that would be emphasized in all its activities. Another direction of the activities was to be towards providing more specific communication.

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[2]Actually the proposal for the Project was written for 1977-1981 so as to coincide with the same period as the Fourth National Economic and Social Development Plan. However, UNFPA provides assistance in two-year periods.

The Necessity for Evaluation

The FPCDIC Project was designed before 1973, and though the Project had been changed to the National Family Planning Communication Support Program, future operations were certainly to take into account what had come before. Furthermore, the present Project was clearly to continue with all ongoing activities. Therefore, there was the need to know how effectively the Project was operating.

In general, for communication projects such as this, three types of evaluation may be undertaken. These are evaluation of needs and plans for future communication efforts or "designs evaluation," evaluation of program processes or operations, sometimes referred to as "program monitoring" or "operational feedback," and evaluation to assess the impact(s) of the program (UNESCO 1974: 19).

The FPCDIC Project had its own plans for evaluation. Recently, an evaluation study entitled "The Use of Mass Media in Family Planning"[3] was completed by the Research and Evaluation and the Information and Public Relations Sections. The study compared the effectiveness of various types of inputs. More specifically it looked at mass media input (including the mobile motivation unit) and trained health personnel input. A preliminary report of the study stated that certain kinds of input were capable of increasing the number of acceptors.

The Information and Public Relations Section also conducted a survey called "Follow-up Survey on the Use of Motivation and Information Equipment in Family Planning in Rural Areas."[4] Here, a sample of equipment-users in the country were interviewed; however, the final report has not yet been published.

Another interesting study, "A Design for the Evaluation of Communication Inputs Used in the National Family Program THA/72/PO7," was proposed by the Development Support Communication Service. The study was to be conducted on a national basis and was proposed to the NFPP for its use.

Evaluation research is urgently needed in the field of FP communication if the ultimate goal of decreasing fertility is to be achieved. It is for this reason that the present study has been undertaken.

METHODOLOGY OF THE STUDY

Among the various types of evaluation research, impact evaluation was chosen for the present study because this type of evaluation is capable of answering two of the most important questions needed in project administration, i.e., whether or not the project served its purpose and how the project should be continued in the future. Although this study did not expect to provide definitive answers to these two questions, it was hoped that its results, together with other available information, could be used in future programming, i.e., revision of programs, or in the implementation of larger-scale or in-depth studies.

The Objectives of the Study

This study had two objectives. First, it sought to conduct a summary evaluation of the FPCDIC Project in order to obtain information about its actual effectiveness. Second, it aimed to study the impact of various inputs in order to evaluate the effect of each input and to identify the problems of each of the inputs. It was also intended to list the advantages and disadvantages of each input.

It should be kept in mind that the present study was a case study. As such its findings have limitations.

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[3]Title translated from Thai.

[4]Title translated from Thai.

The Evaluation Design

A summary evaluation involves the assessment of project effectiveness. Therefore, the question of what is to be regarded as effective or ineffective had to be settled. However, since the FPCDIC Project had such a varied target population that the expected achievements with each population would be difficult to measure, it was decided not to evaluate the Project's effectiveness in terms of expected achievements with each population. Further, it was decided not to evaluate the Project's effectiveness in terms of its objectives because these were implementation objectives, not output objectives or project impact objectives. Even though it was possible to spell out what the Project aimed to achieve, it was very difficult to specify the level of each expected achievement, particularly in quantitative terms. Furthermore, it was almost impossible to include all the outputs in a single study. The final decision was, therefore, to use the Project's ultimate goal as the criterion and to interpret this goal in quantitative terms.

The overall objective of the NFPP was to reduce the country's fertility rate by providing FP services. Thus, it is safe to state that all objectives of the FPCDIC Project (as well as other identified expected achievements) are supportive of this overall objective. In other words, the ultimate goal of the Project's IEC activities was to emphasize the necessity for reducing fertility by motivating eligible couples through the use of FP services. Although the expected achievements were the same for both rural and urban married couples, it was stressed that the strategy of the Project showed a clear bias towards rural married couples. Thus, the present study investigated the impact of the Project on rural married couples.

The next step was to determine the extent of the Project's impact on rural married couples. Listed below are the expected achievements of the Project's IEC activities on rural married couples (Information and Public Relations Section n.d.), or what the couples should be able to do as a result of the Project's IEC efforts.

1. To explain the definition of FP and its advantages to the family;
2. To explain different birth control methods and their advantages, disadvantages, and side effects;
3. To inform others of the benefits of FP;
4. To influence others to accept FP services by providing information on where to receive the service and the cost of services;
5. To encourage others to accept FP services;
6. To make a voluntary decision about birth control (either husband or wife); and finally
7. To continue to use birth control methods until the decision is made to have additional children or until the woman is past the fertile age.

The target population of these rural FP acceptors was also included in the evaluation. The Project objectives or expected impacts were translated into a series of KAP questions which were contained in the interview schedule. A single survey was thought to be inadequate because although it would yield some information on the Project's past performance, the information would be a general KAP survey and so lack evaluative value. Thus, it was decided that a field experiment would be followed. Literature on communication evaluation have expressed the benefits of similar field experiments (Rogers 1974: 20). More specifically, a quasi-experimental design for evaluation was used. This strategy involved doing the usual activities of the Project in some areas and using slightly different activities in other areas. To assure the validity of the findings, pre- and post-evaluative surveys were undertaken.

Weiss (1972) provides the rationale for using a quasi-experimental design. Such a design, she says has

> the advantage of being practical when conditions prevent true experimentation. But they are, in no sense, just sloppy experiments. They have a form and logic of their own. Recognizing in advance what they do and do not control for and the misinterpretations that are possible, allows the evaluator to draw conclusions carefully. Quasi-experiments in their terms, require the same rigor as do experimental designs. (Weiss 1972: 67, 68)

The design of the study consisted of the following activities: planning and designing the quasi-field experiment, benchmark or pre-survey, field treatments, post-survey, and data analysis. Unfortunately, the study could not utilize a time-series design in the evaluation due to limitations of time and budget.[5] Perhaps future evaluation research could include this future.

The Hypothesis

The underlying assumption of most FP activities is that these efforts will lead to an increase of KAP in FP among the target population. Thus, an increase of KAP is usually one of the immediate goals of FP communication programs (Rogers 1974: 19). This means that there has to be an expected causal relationship between FP communication and KAP. In order to rate a project as successful, the impact of that project must be at a level that has been considered satisfactory. However, in this study, no such level had been previously determined. Instead, for this study the Project was implemented in different ways, i.e., a low input level, a medium level, and a maximum level. Following this strategy, the Project could be graded as follows:

1. Highly successful, i.e., the area given maximum inputs clearly showed increased KAP which was higher than the other two areas that had received lower input levels.
2. Medium successful, i.e., the areas given maximum and medium levels of inputs showed an increase in KAP, but there was little difference between these two areas, even though the increase in KAP in these two areas was higher than the third area which had been given only minimum inputs.
3. Low successful, i.e., all three areas each had an increase in KAP, but the increase was similar in all areas.
4. Unsuccessful, i.e., there was no change at all.

The following hypothesis, was, therefore, formulated for the study: the maximum level of FP communication inputs on a target population will increase the impact on the population more than a medium level of inputs. A medium level of inpus will increase the impact more than a minimum level of inputs.

Definition of Terms

Level of communication inputs referred to the different kinds of inputs in terms of types of media used. The *minimum* level of communication input consisted of mass media alone, i.e., radio, newspaper, television, and film. The *medium* level of communication input consisted of mass media plus health personnel. In particular the latter included exhibitions, posters, home visits, pamphlets, meetings, and consultation services. Finally, the *maximum* level of communication input consisted of mass media, health personnel, and mobile motivation teams.

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[5]A time-series design involves a series of measurements at periodic intervals before the project begins and continuing measurements after the project ends. The method enables a verification upon the benchmark and post surveys' results (Weiss 1972: 68).

Target population referred to married couples in the rural areas. The Project's *impact* was operationally defined as the FP knowledge, attitudes, and practice of the target population.

Increase referred to percentage increases registered when results of the pre-survey were compared with those of the post-survey. Only increases of five percent or more were considered significant.

Treatment Design

Since the treatment design of the present study involved the actual inputs of the FPCDIC Project, it is necessary at this point to summarize the Project's major inputs. These inputs are discussed below.

1. *The Training of the Health Personnel.* Existing government hospitals, health centers, and midwifery had been utilized as FP service outlets by NFPP. Moreover, no additional staff were recruited to do FP work. Instead existing personnel were used for this purpose. Consequently this personnel had to be trained in FP, i.e., in service as well as motivation techniques.

There were various types of health personnel, i.e., physicians, supervisors, nurses, intermediate supervisors, midwives, and sanitarians. Among these the midwives were the most common type since they were the most numerous and since they worked at the community level. More specifically, midwives worked at health centers and midwifery centers. In the former, one midwife worked with one sanitarian; in the latter, the midwife worked alone. Both of these centers were located at sub-district levels (though not all sub-districts have a center). Midwives played a limited role in providing birth control services, i.e., only distributing pills and condoms. Training in the improvement of communication activities was, therefore, directed specifically at midwives.[6]

Midwives constituted the bulk of trainees in the provincial health personnel training. Within each class, only one to five percent were nurses. The total number of health personnel that were to be trained during the Project's three-year period (1973-1975) was 4,500 persons. This number included nurses, midwives, sanitarians, and FP workers throughout the country (Burusphat 1974: 7).

2. *The Mobile Motivation Unit.* One of the most important functions of the mobile motivation unit was to support the training component of the Project. Nevertheless, these two inputs were considered independent channels of motivation activities. As such they were evaluated separately. With the exception of an occasional exhibition or seminar support, activities of the mobile motivation units were quite constant. These activities followed a schedule of morning, afternoon, and evening sessions.

3. *Mass Media Motivation Activities.* Mass media was another important communication channel of NFPP. Many of the materials used were produced by the Public Relations and Information Section and the DSCS.

Although, the inputs of the project were quite specific, it was not possible to determine the exact pattern of how the input was actually used on any specific population target. This was largely because all the inputs were used on the total population, and the extent to which they were used differed from one geographic region to another. For example, although the radio had the largest coverage, not all programs started promptly. Public health personnel were not all trained at the same time. The distribution of the health personnel was not even. The mobile motivation unit was an exception since its coverage was small. (There are presently ten mobile teams.)

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[6]The Project's training program consisted of three levels, namely, training of the nurses in the Information Section of the Family Health Division, training of the Regional Task Force Trainers, and training of the provincial health personnel. The midwives received the last type of training which consisted of two parts, namely, the in-class training of health personnel in the techniques of FP, motivation, and the follow-up or field observation.

For the purpose of the present study the above inputs were grouped into three categories. These are listed below.

1. Mass media input which included radio, television, movies, and newspapers.
2. Health personnel input which included activities arranged by the health personnel. These activities included exhibitions and displays held at health centers or midwifery centers, home visits, consultations with FP acceptors, etc. Posters and leaflets distributed or displayed by health personnel were also included in this category.
3. Mobile motivation units included morning sessions for acceptors and fertile persons, afternoon sessions for local leaders, and evening sessions for the general public.

It is worth mentioning that since leaflets and posters were distributed by the health personnel, these materials were classified under the second category, instead of the mass media category. Mobile units were not included under the mass media category either because, even though they were a type of mass media, their audiences were very small in number when compared to the audiences of other mass media channels, such as the radio or the television. The mobile unit was not classified under the health personnel category due to the limited number of mobile teams and because it was seldom that health personnel were able to work continuously with a mobile unit.

The treatment was designed so that each area of the study would receive some attention. Though this meant that there would be no completely isolated area left as a control area, it would, in a way, benefit the study because the Project was being evaluated as an ongoing project. It would have been inaccurate to have selected an area and to have assumed that it had never received any treatment, since the national FP program had already been functioning for more than five years.

In order to ensure that repeated treatment had a measurable impact, each treatment was intensified. This ensured a change in the three-month period, if any. One important question considered was — how much change should be expected after the period of treatment? However, this question could not be settled, even after much discussion. Hence, it was agreed that any change in family planning KAP of the target population would be sufficient.

The last decision related to the evaluation design involved the composition of the treatments used in the study. Since among the different categories of Project inputs mass media had the greatest coverage, it was decided to include this feature in all the treatments. The health personnel category had the next greatest coverage, therefore, it was decided that some treatments should not have this input. The mobile motivation team had the least coverage so it was confined to only one treatment.

For these reasons the final results of the design consisted of three kinds of treatment. Treatment A included only the mass media input. Treatment B consisted of the mass media input and health personnel input. Finally, Treatment C included mass media, health personnel, and the mobile motivation input.

Selecting the Study Area

Nakorn Sawan Province was not selected at random. It was selected because the study was to be a case study covering only a very small area. Random sampling of the province for the study would not make the sample a representative one. Furthermore, a random sample could have included provinces that were too highly urbanized or, on the other hand, too rural to yield the necessary data.

Nakorn Sawan was selected after carefully considering the various characteristics of the province. Some of these characteristics were: the size of the province's population; the number and growth rate of FP acceptors in the province, its geographic location; and its

general socio-economic characteristics (National Statistical Office 1974). The main deciding factor in the selection of Nakorn Sawan was that it was similar to other provinces in many ways. Another important factor which led to the selection of Nakorn Sawan was the presence of communication facilities, particularly mass media channels in the province.

Managing the Treatments

The first step in implementing the treatments was making necessary arrangements within the province. Planning trips were made to Nakorn Sawan Provincial Public Health Office. An orientation on the study was given to the health personnel of the districts to be included in the study. The personnel involved in Treatment A were told that the study was not going to measure their capabilities and, therefore, there was no need to fear the outcomes of the study. They were asked to perform their activities in the usual way. Personnel involved in the Treatment B and Treatment C areas were given refresher courses on communication and motivation techniques. Their role in the study was made clear, that is, they were to increase their motivation activities both in the health center and in the villages.

Two kinds of charts were designed to support FP displays at the health centers. These charts showed data on FP acceptors of Nakorn Sawan by method in the past six months and new FP acceptors by month by method. It was hoped that these charts would motivate and stimulate the health personnel to increase their activities. The charts were kept simple so as not to be the main attraction of the health center but rather to function as supportive material.

Short report forms were designed to follow up the home visits and the meetings arranged by health personnel, according to Treatments B and C. No particular instructions were issued as to what the personnel was to do with the forms or how much was to be done on each of them.

It was mentioned earlier that Nakorn Sawan has well-established mass media channels. A relay television station is located there, relaying television programs from Bangkok. Nakorn Sawan has its own local television programs from five to six in the evening. Family planning spot announcements were already being used at the station. All that needed to be done was to ask the station to cooperate in making the spot announcements consistent during the three months of the study.

The Provincial Public Health Office had already engaged the cooperation of the local radio station and had been broadcasting health-related programs with FP messages. For the purposes of the study the Provincial Public Health Office was asked to increase the FP section of the programs.

Movie theaters were also already showing FP-related slides before showing their main features. These theaters were simply asked to continue these activities. The newspapers were willing to cooperate by publishing news and articles sent to them or any FP-related news they could find.

One mobile motivation unit of the NFPP was allowed to operate continuously in the area covered by Treatment C. During the three-month period of the study the unit was able to visit almost every community in the area. The treatments began in mid-October 1976 and lasted for three months.[7] To ensure that there would be no problems, researchers made occasional trips to Nakorn Sawan to observe the treatment activities.

[7]Due to political problems at the beginning of October, martial law was declared and no gatherings of people was allowed after 7.00 p.m. Martial law caused the mobile unit to operate only during the day throughout most of November. Near the end of November and all through the rest of the study's duration, the unit was able to operate as planned.

Sampling

A multiple stage sampling and elimination process was used to determine samples of the study. The stages are described below:

1. Similar districts were grouped together and those that were unique were eliminated. Nakorn Sawan had a total of 12 districts. They were:
   a. Amphoe (district) Muang Nakorn Sawan
   b. Amphoe Krok Phra
   c. Amphoe Chumsaeng
   d Amphoe Takhli
   e. Amphoe Tha Tako
   f. Amphoe Phayuha Khiri
   g Amphoe Banphot Phisai
   h Amphoe Phai Sali
   i. Amphoe Lat Yao
   j. Amphoe Nong Bua
   k. Amphoe Tak Phra
   l. Amphoe Kao Lieo

At this first stage of the sampling process, districts that were officially regarded as having municipal areas, i.e., Amphoe Muang Nakorn Sawan and Amphoe Chumsaeng, were eliminated. These districts were thought to be atypical when compared to other districts. Furthermore, municipal areas had already been the targets of the NFPP. Owing to its unique geographic characteristics Amphoe Lat Yao was also eliminated. Lat Yao consists mainly of dense forests and mountains. This distinguishes it from other districts in the province. Besides, the dense forests would also have increased the difficulty of studying the types of treatment that would have been implemented there.

2. A criteria was established for grouping the districts, using three main characteristics, i.e., general occupation, geographic setting, and the level of mass media exposure and road accessibility. Two groups of districts were formed after this procedure was done. The dominant characteristics of the first group were rice as the principal agricultural crop, followed by garden crops, and location on river plains. In the second group, garden crops surpassed rice growing and the districts were located on higher plains where there were large areas of forests. The first group included the following districts: Banphot Phisai, Krok Phra, Phayuha Kiri, and Kao Lieo. The second group included Tha Tako, Phai Sali, Nong Bua, and Tak Pha.

3. Between the two groups, the one considered typical of Thailand as a whole was selected. On this basis, the first group was chosen since rice and not garden crops is the typical product of Thailand. Furthermore, the districts in the first group are located on river basins, a characteristic of many Thai villages. The first group was also actually better for the study in that it had more accessible roads. Villages without such roads were most likely excluded in the areas served by the mobile unit and also the samples of the surveys. Finally, the first group of districts also had a sufficient number of households with television sets to support the treatments.

4. The first group was subjected to a final elimination process to find any unique *amphoe* within the group. At this point, Amphoe Takhli was eliminated because it was considered to be highly exposed, most probably as a result of having once been a base for U.S. troops. Amphoe Kaoliew was also eliminated because the district was engaged in sugarcane cropping rather than the general garden crops, i.e., corn, peanuts, mung beans, and sorghum.

5. The final stage of the sampling process was the random selection of districts that would receive Treatments A, B and C. The results of this final sample stage were as follows: Amphoe Krok Phra — Treatment A; Amphoe Banphot Phisai — Treatment B; and Amphoe Phayuha Kiri — Treatment C.

The respondents for the interview were to consist of married couples (women between 15 and 44) living in the three study districts. Shown below are the calculations used in determining the sample size using the following criteria: (a) margin of error of three percent; (b) risk in error sampling of five percent; and (c) estimate sample size of five percent. A sample size of 787 respondents was determined and proportionately characterized as follows: Krok Phra — 150 respondents; Banphot Phisai — 354 respondents; and Phayuha Kiri — 383 respondents.

Tambol (groups of villages) and villages were selected by using elimination and systematic random sampling methods. The selection of households was based on systematic sampling.

Finally, it should be noted that due to insufficient information the eliminations or groupings were done using rather broad criteria. Nevertheless, caution was used in interpreting the limited data that was available.

The Questionnaire

A questionnaire was designed to elicit data on the respondents' family planning KAP and to relate it to their background characteristics and exposure to communication inputs. The questionnaire was divided into five major parts, namely, respondents' background characteristics, knowledge of FP, attitude towards FP, practice of FP, and exposure to FP communication inputs.

Two questions on free medical services (including pills) mandated by the government's recent welfare policy were added. This was done on the assumption that this policy had an effect on the public. Finally, an interviewer's report was also used to minimize interviewing errors.

THE FINDINGS OF THE STUDY

The findings of the study are grouped into four sections, namely, the background characteristics of the respondents, their knowledge of FP, their attitudes towards FP, their practice of FP, and finally, their exposure to FP communication media.

Background Characteristics

The characteristics discussed are as follows: respondents' sex, number of years they had lived with their spouse, monthly income, education, and fertility.

In analyzing the background characteristics of the respondents, two types of comparisons were made, namely, a comparison of respondents of the pre-survey with those of the post-survey within each district and a comparison of respondents from different districts within the same survey. Although the intended respondents of both surveys were married men or women, most of the respondents in both surveys were in fact women (Table 2). There are two reasons for the predominance of women in both samples. First, in cases where both parties were available for the interview, it was decided

TABLE 2
Percentage Distribution of Respondents by Sex, by District, and by Survey

	Krok Phra		Banphot Phisai		Phayuha Kiri	
Sex	Pre-	Post-	Pre-	Post-	Pre-	Post-
Male	22.7	16.7	24.3	16.9	25.8	16.0
Female	77.3	83.3	75.7	83.1	74.2	84.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

that the wife should be interviewed because most contraceptive methods are for women. Second, it was the wife who was more frequently found at home.

Comparison between districts within the same survey showed that there was little difference between the male-female ratio in each district. However, there was a considerable difference in the district ratios between surveys. This was probably a consequence of the timing of each survey, i.e., the second survey was made in January during harvest time, so the men worked longer than usual.

The general age of the respondents in all the districts was about 30 to 34 years. There was very little age difference among the respondents (see Table 3).

More than 50 percent of the respondents had been living with their spouses for ten years or less. When the results of the pre- and post-surveys were compared in this regard, it was seen that there were more respondents with less than five years duration in the pre-survey than there were in the post-survey.

The respondents had a wide variety of occupations. The majority of them were engaged in rice cropping. Garden cropping was the next most common type of occupation.

TABLE 3
Percentage Distribution of Respondents by Age, by District, and by Survey

Age (years)	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
15-19	1.3	2.6	3.1	2.0	0.4	1.4
20-24	13.3	16.7	16.7	21.5	13.3	16.7
25-29	22.7	22.0	26.0	24.0	19.8	21.2
30-34	23.3	20.7	19.2	21.5	24.4	19.4
35-39	18.7	16.0	19.5	16.9	22.3	19.4
40-44	20.7	22.0	15.5	13.8	19.4	20.1
No answer	—	—	—	—	—	0.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	
Mean	32.37	30.4	31.0	30.6	32.6	32.0

TABLE 4
Percentage Distribution of Respondents by Number of Years They Had Been Living With Spouse, by District, and by Survey

No. of Years Living With Spouse	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Below 5	24.0	36.7	32.8	33.9	20.5	32.9
6-10	30.7	23.3	21.3	27.7	26.9	23.0
11-15	19.3	17.3	20.9	17.5	25.2	15.2
16-20	18.0	14.0	17.0	11.6	18.4	17.7
21-25	8.0	7.3	8.0	9.0	8.1	9.5
Above 25	—	1.3	—	0.3	0.4	1.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 5
Percentage Distribution of Respondents by Type of Occupation, by District, and by Survey

Type of Occupation	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Rice cropping	28.0	73.7	73.2	51.3	41.0	46.6
Garden cropping	34.0	4.0	8.8	18.7	38.5	24.0
Fishing	—	—	0.3	—	—	—
Merchant	17.3	6.2	7.6	13.3	7.4	13.4
Employee	9.3	11.6	6.5	6.7	9.5	6.7
Government official	6.7	0.3	1.4	1.3	0.1	2.1
Others	0.7	0.8	—	2.0	—	0.5
Not working	4.0	3.4	2.3	6.7	2.8	6.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

One question was asked about the monthly income of the respondent's family. The results showed that most of the respondents had a family income below 1,500 baht per month. Table 6 shows the details of the findings on monthly income.

Most of the respondents had obtained up to the fourth grade level of education, the minimum education required by the government. Banphot Phisai had the highest number of respondents with little formal education when compared to the other districts. This was true in both surveys. This was probably due to Banphot Phisai's large population and area.

The respondents were asked whether or not there were persons in their households who could read and write. Results showed that over 95 percent of the respondents' households in both surveys had persons capable of reading and writing (see Table 7).

The respondents were asked seven questions about their fertility. The first question pertained to the number of times the respondent had been pregnant. Results showed that in the pre-survey the mean number of times the respondent had been pregnant (including stillbirths, abortions, and deaths after birth) was slightly higher than that in

TABLE 6
Percentage Distribution of Respondents by Monthly Income of the Family, by District, and by Survey

Monthly Income (baht)	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Below 500	12.0	22.7	11.6	12.4	22.6	16.6
501-1,000	44.7	47.3	28.0	34.7	37.8	39.6
1,001-1,500	20.0	20.0	29.1	30.5	21.6	18.4
1,501-2,000	8.7	4.0	17.0	14.1	7.0	12.0
2,001-3,000	8.7	4.0	9.6	5.9	7.8	11.7
Above 3,000	6.0	2.0	4.5	2.4	3.2	1.7
No answer	—	—	0.3	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 7
Percentage Distribution of Respondents by Number of Years of Formal Education, by District, and by Survey

No. of Years of Formal Education	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
0	7.3	4.7	18.4	21.8	17.0	6.4
1-4	81.3	87.3	77.4	73.4	80.6	83.0
5-7	3.3	4.7	2.0	2.8	0.7	5.7
8-10	3.3	1.3	0.9	1.7	1.1	2.1
Above 10	4.8	2.0	1.4	0.3	0.6	2.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

*Classification of grades was made according to formal education levels in Thailand.

the post-survey. The difference in mean numbers was most clearly shown in Phayuha Kiri, where it was 3.7 in the pre-survey and 3.2 in the post-survey (see Table 8).

The number of the respondents' living children were, in all districts and in both surveys, lower than the number of pregnancies (Table 9). A comparison of districts showed that Phayuha Kiri had the highest mean number of living children, followed closely by Krok Phra and Banphot Phisai. In the second survey Banphot Phisai had the highest mean number of living children. Phayuha Kiri and Krok Phra were found to be at the same level.

The majority of the respondents said they were still capable of having additional children (Table 10), but the number of respondents stating that they wanted additional children was considerably lower (see Table 11). The number of additional children desired ranged from about 1.5 to 1.8 (Table 12).

TABLE 8
Percentage Distribution of Respondents by Number of Times She (or Spouse) Had Ever Been Pregnant, by District, and by Survey

No. of Times Pregnant	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
0	3.3	4.7	4.0	3.7	3.2	5.7
1	18.7	20.7	17.6	16.1	14.5	21.2
2	21.3	20.7	18.4	21.2	19.8	20.1
3	18.7	16.7	20.6	17.2	19.4	15.2
4	12.7	12.0	12.2	10.3	12.4	14.8
5	9.3	6.7	8.8	11.2	8.8	7.0
6	6.0	7.3	6.2	5.6	7.4	6.0
7	3.3	3.3	4.0	5.6	5.0	2.1
8	2.0	4.0	4.0	4.5	3.9	3.2
9	2.7	1.3	1.7	1.1	2.5	2.1
10 and above	2.0	2.7	2.3	3.5	3.1	2.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	
Mean	3.3	3.3	3.5	3.6	3.7	3.2

TABLE 9
Percentage Distribution of Respondents by Number of Living Children, by District, and by Survey

No. of Living Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
0	6.0	11.3	8.5	6.8	6.0	11.0
1	19.3	18.0	22.0	20.6	17.3	22.3
2	24.0	24.7	23.2	23.2	22.3	18.7
3	18.7	14.7	17.0	14.9	21.6	17.7
4	13.3	12.0	12.4	15.3	10.6	11.3
5	6.7	6.7	7.1	7.9	10.3	7.0
6	5.3	6.0	4.5	5.9	4.6	5.7
7	4.7	4.1	3.4	2.8	4.6	3.9
8	1.3	1.3	1.4	2.3	1.8	1.8
9	—	0.7	0.6	—	0.7	0.6
10 and above	0.7	—	—	0.3	0.4	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	
Mean	2.9	2.7	2.7	2.8	3.0	2.7

TABLE 10
Percentage Distribution of Respondents by Capability to Have Additional Children, by District, and by Survey

Capability to Have Additional Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	76.7	84.0	76.3	76.3	73.1	75.3
No	14.0	11.3	12.5	18.6	17.0	18.7
Don't know	9.3	4.7	11.2	5.1	9.9	6.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 11
Percentage Distribution of Respondents by Desire to Have Additional Children, by District, and by Survey

Desire to Have Additional Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	26.0	30.0	34.5	30.8	24.7	31.4
No	68.7	65.3	59.3	63.6	67.1	64.0
Don't know	5.3	4.7	6.2	5.6	8.2	4.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 12
Percentage Distribution of Respondents by Number of Additional Children Desired, by District, and by Survey

No. of Additional Children Desired	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
1	71.8	55.6	50.8	56.9	54.3	56.2
2	18.0	40.7	36.9	33.0	34.3	36.0
3	5.0	2.2	7.4	8.3	5.7	4.5
4	—	2.2	3.3	1.8	4.1	3.3
7	2.6	—	—	—	1.6	—
10 and above	2.6	—	1.6	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(39)	(45)	(122)	(109)	(70)	(89)
Mean	1.6	1.5	1.8	1.6	1.7	1.5

Table 13 shows that the reason given by most of the respondents for wanting additional children was simply "not having enough children at present." It seems that there was no strong demand for any particular sex of the child. Perhaps those who presently had children of only one sex simply wanted another child, but of the opposite sex.

Table 14 shows that the majority of the respondents who did not want any children were satisfied with the present number of children they had. A sizeable number stated that they already had too many children.

The last background characteristic investigated by the study was the respondents' ideal number of children a family should have. Results show that this number ranged from 2.9 to 3.4. Mean numbers from the pre-survey were higher than those in the post-survey, with the exception of Banphot Phisai (see Table 15).

Family Planning Knowledge of the Respondents

Table 16 shows the results of the first question testing the respondent's ability to define the term "family planning." The following were considered correct definitions: "having

TABLE 13
Percentage Distribution of Respondents by Reasons for Desire to Have Additional Children, by District, and by Survey

Reason for Desire to Have Additional Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Presently not enough children	59.0	55.6	52.5	44.0	52.9	49.4
Want a son	12.8	15.6	17.2	34.9	20.0	22.5
Want a daughter	10.2	26.7	18.9	16.5	11.4	22.5
Others	18.0	2.1	9.8	4.6	11.4	5.6
No answer	0.0	0.0	0.6	0.0	4.3	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(39)	(45)	(122)	(109)	(70)	(89)

TABLE 14
Percentage Distribution of Respondents by Reasons for Not Wanting Additional Children, by District, and by Survey

Reason for Not Wanting Additional Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Already too many children	26.2	20.4	22.9	13.3	27.4	22.7
Satisfied with present number of children	65.0	44.8	52.9	50.2	54.2	55.8
Economic reasons	7.8	28.6	18.0	28.0	12.1	13.3
Others	1.0	3.1	2.9	8.5	2.6	8.2
No answer	0.0	3.1	3.3	0.0	3.7	0.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(103)	(98)	(210)	(225)	(190)	(181)

TABLE 15
Percentage Distribution of Respondents by Ideal Number of Children a Family Should Have, by District, and by Survey

Ideal No. of Children	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
0	0.0	0.0	0.0	0.0	0.0	0.4
1	0.0	2.7	0.9	0.8	0.7	0.4
2	22.7	31.3	23.7	29.9	25.4	42.6
3	28.0	36.0	36.7	29.4	38.9	31.5
4	42.0	23.3	30.8	29.4	29.3	20.5
5	4.7	5.3	4.8	5.6	4.5	2.8
6	1.3	0.7	2.2	2.8	0.4	1.0
7	1.3	0.0	0.9	0.3	0.4	0.0
8	0.0	0.7	0.0	1.5	0.0	0.0
9	0.0	0.0	0.0	0.3	0.0	0.4
10 and above	0.0	0.0	0.0	0.0	0.4	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	
Mean	3.4	3.0	3.2	3.3	3.2	2.9

a suitable number of children that the parents are capable of raising," "spacing between children," and "planning the size of the family." Results show that between surveys within the same district there was a slight increase in the number of respondents capable of correctly defining FP in Phayuha Kiri and Banphot Phisai. On the other hand, a decrease was noted in Krok Phra. Comparing districts, Phayuha Kiri had the highest number of respondents who were capable of giving the correct definition, followed by Krok Phra and Banphot Phisai, respectively.

Table 17 shows the percentage distribution of the respondents who were capable of naming a contraceptive method without any assistance from the interviewer. In many

TABLE 16
Percentage Distribution of Respondents by Ability to Define "Family Planning," by District, and by Survey

Definition Given	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Right definition	54.7	48.0	36.4	37.3	53.7	57.2
Other definition	7.3	—	9.3	—	8.1	0.4
Don't know	38.0	52.0	54.2	62.7	38.2	41.0
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 17
Percentage Distribution of Respondents by Ability to Name Contraceptive Methods, by District, and by Survey

Contraceptive Method Named	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Oral pill	82.0	82.7	74.0	75.1	78.8	78.8
IUD	62.0	56.0	41.0	42.4	50.5	40.6
DMPA (injectables)	42.7	30.0	26.3	28.0	37.1	29.0
Male sterilization	45.3	38.0	41.2	34.7	22.6	25.8
Female sterilization	46.0	46.7	45.2	51.7	42.4	30.7
Condom	30.7	22.7	19.0	15.5	24.0	24.0
Others	2.0	1.3	2.0	—	1.1	2.1
None at all	12.7	11.3	16.4	—	11.7	9.5

Note: Multiple responses possible.

cases a decrease in the number of respondents who could name a given contraceptive method was noted in the post-survey. The decrease was most clearly seen in Phayuha Kiri and in Krok Phra. A slight increase in Banphot Phisai was noted.

Most of the respondents who were unable to name the method unaided recognized the method when it was read to them. A general increase in the number of respondents in this group was noted in the post-survey (see Table 18).

Table 19 shows that only a small number of the respondents who were able to recognize contraceptive methods were also able to explain the method well. There were many respondents who were capable of explaining the method only minimally. Some were unable to explain the method at all. The gauge used to rate the respondent's explanation was his/her ability to answer the following questions correctly: How was the method used? Who (male or female) was to use the method? What side effects usually occurred? Was the method permanent or not? Explanations with three of four correct answers were regarded as "well," one or two correct answers were "minimal." Respondents who gave no correct answers were rated "unable to explain."

Table 19 shows no systematic changes within the same districts. However, an examination of the table shows Krok Phra to have had the most positive change, followed by Phayuha Kiri and Banphot Phisai, respectively. A general decrease in the number of respondents who were unable to explain the method they had recognized was noted.

TABLE 18
Distribution of Respondents by Ability to Recognize Contraceptive Methods After Each Method Had Been Read to Them, by District, and by Survey

Contraceptive Method Recognized	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Oral pill	70.4% (27)*	65.4% (26)	76.1% (99)	78.4% (88)	73.3% (60)	76.6% (60)
IUD	68.4% (57)	69.7% (66)	69.9% (209)	74.0% (204)	74.3% (140)	74.4% (168)
DMPA (injectables)	59.3% (86)	66.7% (105)	67.4% (269)	69.0% (255)	66.9% (178)	68.2% (201)
Male sterilization	58.5% (82)	65.6% (93)	63.0% (208)	66.6% (231)	59.4% (219)	68.1% (210)
Female sterilization	60.5% (81)	68.8% (80)	55.6% (194)	69.5% (171)	72.2% (163)	74.5% (196)
Condom	39.4% (104)	56.9% (116)	55.4% (287)	56.9% (299)	55.4% (215)	69.0% (215)

Note: The above table excludes those respondents who were able to name a contraceptive method unaided.
*Numbers in parenthesis are the raw figures.

TABLE 19
Percentage Distribution of Respondents by Ability to Recognize Contraceptive Methods and Define Them, by District, and by Survey

Contraceptive Method Recognized	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Oral pill						
Explained well	28.2	43.3	42.4	34.0	36.0	39.8
Explained minimally	52.8	48.2	36.8	52.5	52.4	49.4
Could not explain	19.0	8.5	20.8	13.5	11.6	10.8
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(142)	(141)	(332)	(335)	(267)	(269)
IUD						
Explained well	9.1	19.2	19.8	17.9	22.0	13.7
Explained minimally	53.0	50.0	53.0	47.5	38.8	59.6
Could not explain	37.9	30.8	27.2	34.6	39.2	26.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(132)	(130)	(291)	(301)	(247)	(240)
DMPA						
Explained well	20.0	24.3	24.9	25.5	27.2	29.2
Explained minimally	51.3	47.0	41.3	44.4	47.8	45.2
Could not explain	28.7	28.7	33.8	30.1	25.0	25.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(115)	(115)	(269)	(275)	(224)	(219)
Male Sterilization						
Explained well	12.1	7.4	14.4	15.9	5.2	8.8

TABLE 19 (Continued)

Contraceptive Method Recognized	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Explained minimally	32.8	38.0	35.4	35.0	39.7	43.1
Could not explain	55.1	54.6	50.2	49.1	59.1	48.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(116)	(108)	(277)	(277)	(194)	(216)
Female Sterilization						
Explained well	11.0	17.6	13.0	19.5	7.9	12.4
Explained minimally	35.6	35.2	31.3	38.1	43.9	43.3
Could not explain	53.4	47.2	49.7	42.4	48.2	44.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(118)	(125)	(300)	(302)	(228)	(233)
Condom						
Explained well	23.0	20.8	20.0	17.8	17.1	17.1
Explained minimally	32.2	31.7	38.7	40.0	42.3	53.2
Could not explain	44.8	46.5	41.3	42.2	40.6	29.7
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(87)	(110)	(225)	(225)	(194)	(216)

Table 20 shows the places identified by respondents as sources of FP services. Government service units were mentioned most often, presumably because there were few private centers in the area. Government centers were found to provide vital health facilities for the rural community. However, one of the problems in analyzing this particular set of data was that some villagers found it difficult to distinguish between midwifery centers and health centers. Respondents found these places to be very similar in terms of their functions. Perhaps this caused the infrequent mention of midwifery centers. No outstanding differences were noted between the results of the pre- and post- surveys.

TABLE 20
Percentage Distribution of Respondents by Service Centers Named, by District, and by Survey

Source of FP Services	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Hospitals	48.7	31.3	29.4	29.6	31.8	27.6
Provincial public health office	4.0	6.0	5.1	4.2	6.0	2.1
Health center	62.0	73.3	83.9	76.3	80.2	85.9
Midwifery center	20.7	20.7	1.1	1.1	1.8	2.1
Private clinics	8.7	3.3	3.1	4.0	7.1	4.6
Pharmacy or drug stores	11.3	10.7	5.6	8.2	15.5	7.1
Others	1.3	—	1.7	3.0	2.1	0.4
Don't know	10.0	10.0	10.4	9.6	7.1	4.6

Attitude of the Respondents Towards Family Planning

Questions asked on the attitude of the respondents towards FP were designed to measure three items, namely, attitude towards individual or family, attitude towards the respondents' community, and attitude towards the country concerning FP. Two questions about abortion designed to test the attitude of the respondents on this matter were also asked.

Table 21 presents the data on questions asked concerning the respondents' attitudes towards the individual or the family and FP. An increase in positive attitudes of the respondents was noted in the post-survey. However, many of the changes were very slight and could easily be considered insignificant. Nevertheless, with regard to the level of change between the different districts, Banphot Phisai had the highest level of change followed by Krok Phra and Phayuha Kiri, respectively. Krok Phra had the most respondents with positive attitudes.

Responses to questions on the respondents' attitudes towards the community and FP are shown in Table 22. An increase in the post-survey figures is noted for all the questions. Some of the increases were very high, e.g., in Phayuha Kiri. This district showed the highest level of change, followed by Banphot Phisai and Krok Phra, respectively. When

TABLE 21
Percentage Distribution of Respondents by Attitude Towards the Individual or the Family and Family Planning, by District, and by Survey

Attitude Towards Individual/Family and FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Do you agree that birth control practice is one of the ways of reducing the expenditures of the family?						
Yes, agree	93.3	96.7	89.0	93.8	95.8	95.8
No, disagree	1.3	—	0.9	1.4	0.4	0.7
Don't know, not sure	5.4	3.3	10.1	4.8	3.8	3.5
Do you agree that frequent childbirths may be harmful to the health of the mother?						
Yes, agree	90.7	96.7	89.8	96.0	92.9	94.7
No, disagree	2.0	3.3	4.0	1.7	1.4	3.2
Don't know, not sure	7.3	—	6.2	2.3	5.7	2.1
Do you agree that in a family of two children, the parents are more likely to have more time to give to their children than a family with four children, provided that the two families are equal in economic status?						
Yes, agree	95.3	96.7	86.4	92.0	93.6	95.0
No, disagree	1.3	2.7	7.2	2.5	2.1	1.0
Don't know, not sure	3.4	1.6	7.4	5.5	4.3	4.0

TABLE 22
Percentage Distribution of Respondents by Attitude Towards the Community and Family Planning, by District, and by Survey

Attitude Towards the Community and FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Do you agree that most people in your village agree with FP?						
Yes, agree	89.3	93.3	84.8	88.4	75.7	93.0
No, disagree	2.0	6.7	3.1	1.7	11.0	0.4
Don't know, not sure	8.7	—	12.1	9.9	4.2	6.6
Do you agree that newly married couples should be informed of birth control methods?						
Yes, agree	78.7	86.7	66.4	81.9	74.9	90.1
No, disagree	15.3	4.6	22.3	7.9	17.7	2.8
Don't know, not sure	6.0	8.7	11.3	10.2	7.4	7.1
Do you agree that local leaders or those respected by the village should show interest in FP?						
Yes, agree	86.0	88.7	78.3	83.6	72.4	86.2
No, disagree	2.0	0.6	5.4	1.9	5.3	0.7
Don't know, not sure	12.0	10.7	16.3	14.1	22.3	13.1

comparing the level of positive attitudes Phayuha Kiri retained the highest position followed by Krok Phra and Banphot Phisai.

Table 23 shows increased figures in the post-survey. However, the increases were very small. This could be a result of the already high level of positive attitudes found in the pre-survey.

Although it is not related to the previous tables on the attitudes of the respondents, information in Table 24 may be useful in future evaluation activities. The negative response from the respondents may change after a campaign on abortion. It will be recalled that the response to FP when it was first introduced to the public was also negative.

Family Planning Practice of the Respondents

The respondents' practice of FP was measured in terms of actual acceptance and also in terms of their discussion of family size with their spouses, relatives, and neighbors. Also included in this investigation was the reason for not accepting FP services.

Table 25 shows that a relatively large number of the respondents had discussed the size of their families with their spouses. This was seen in both surveys. However, a comparison of the results of the two surveys shows very little change and a decrease was even recorded, for example, in the post-survey results in Banphot Phisai.

Table 26 shows that Phayuha Kiri had the highest rate of FP acceptors in both surveys, although a decrease was seen in the post-survey. Banphot Phisai had the highest level of increase (seven percent) in the post-survey although it should be noted that in the pre-survey the level of acceptors in this district was considerably lower than the others.

TABLE 23
Percentage Distribution of Respondents by Attitude Towards the Country and Family Planning, by District, and by Survey

Attitude Towards the Country and FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Do you agree with the following statement: "Presently Thailand's population is increasing at too rapid a rate, causing many problems such as poverty"?						
Yes, agree	96.7	97.3	91.5	96.0	97.3	98.9
No, disagree	—	0.7	5.4	2.0	0.7	—
Don't know, not sure	3.3	2.0	3.1	2.0	2.0	1.1
Do you agree that the government should support FP?						
Yes, agree	96.0	96.0	94.1	98.0	96.8	96.5
No, disagree	0.7	—	2.0	—	0.4	0.4
Don't know, not sure	3.3	4.0	3.9	2.0	2.8	3.1
Do you agree with this statement: "A majority of the people are unable to decide whether or not to receive FP services, due to the lack of understanding of FP, its advantages and disadvantages"?						
Yes, agree	87.3	94.0	83.6	87.6	85.5	93.3
No, disagree	4.7	0.7	7.6	3.4	3.9	3.4
Don't know, not sure	8.0	5.3	8.8	9.0	10.6	6.3

TABLE 24
Percentage Distribution of Respondents by Attitude Towards Induced Abortion, by District, and by Survey

Attitude Towards Induced Abortion	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Do you agree that married couples should be able to use abortion as a method to limit family sizes?						
Yes, agree	8.0	3.3	4.5	6.2	4.2	9.9
No, disagree	90.0	89.3	92.1	90.1	91.5	85.9
Don't know, not sure	4.7	7.4	3.4	3.7	4.3	4.2
No. of respondents	(150)		(354)		(283)	

TABLE 24 (Continued)

Attitude Towards Induced Abortion	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Why do you disagree with induced abortion?						
It is immoral	20.7	20.9	18.4	26.0	22.8	26.3
It is dangerous	74.1	67.2	73.0	64.9	64.1	63.4
It is both immoral and dangerous	2.2	9.7	4.3	6.0	9.3	4.5
Others	3.0	2.2	3.1	2.0	3.9	5.8
No answer	—	—	1.2	0.6	—	—
No. of respondents	(135)	(134)	(326)	(319)	(259)	(243)

TABLE 25
Percentage Distribution of Respondents Who Had Discussed with Spouse the Number of Children They Should Have, by District, and by Survey

Whether or Not Family Size Discussed with Spouse	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	69.3	70.0	71.8	70.3	68.9	71.1
No	29.3	30.0	28.8	29.7	31.1	27.9
Others	1.4	—	0.4	—	—	0.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 26
Percentage Distribution of Respondents Presently Practicing FP, by District, and by Survey

Practicing FP at Present	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	50.0	41.3	39.0	46.0	58.3	54.8
No	50.0	58.7	61.0	54.0	41.7	45.2
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

The next four tables pertain to those respondents who were practicing FP. Table 27 shows whether it was the respondent or his/her spouse who was using any birth control method. In all districts, the post-survey results showed a higher percentage of the respondents themselves using these methods. In Phayuha Kiri, however, there was a marked decrease of 19.4 percent. Pre-survey results in this district showed that 90.3 percent of the respondents themselves were using birth control methods. However, the post-survey showed that Phayuha Kiri had the lowest level of respondents who were practicing birth control themselves. In terms of time, the data show that respondents had

TABLE 27
Percentage Distribution of Persons Practicing Birth Control, by District, and by Survey

Person Practicing FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Respondent	77.3	82.3	72.5	76.7	90.3	70.9
Spouse	22.7	17.7	27.5	23.3	9.7	29.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(75)	(62)	(138)	(163)	(165)	(155)

been practicing FP for a long time. The mean number of months reported in the pre-survey ranged from 29.2 months (Krok Phra) to 35.0 months (Phayuha Kiri). The figure for Banphot Phisai was 31.9 months. Results from the post-survey showed the following mean number of months the respondents or their spouses had practiced FP: Krok Phra — 43.2; Banphot Phisai — 32.3; and Phayuha Kiri — 32.3. These figures imply that FP was practiced during the period that the NFPP was in operation.

Oral pills were the most popular method of contraception (see Table 28), a finding that reflects a national trend. Table 29 shows that over 70 percent of the respondents received services from government service units.

Table 30 shows that over 70 percent of the respondents practiced birth control because of economic reasons or because their families were already too large. Of the two reasons, the latter was more frequently cited.

Respondents who were not currently practicing FP were asked for the most important reason why they did not do so. Some of the reasons given agree with FP concepts, e.g., reason number two in Table 31. Reasons three, five, and six contradict FP concepts. In most cases, over 40 percent of the responses were of any one of these reasons. Other reasons were not evaluated because they were conditional, i.e., depending on certain circumstances. A comparison of the results of the pre- and post-surveys shows that Krok Phra had the highest level of positive changes. On the other hand, Phayuha Kiri exhibited negative changes (see Table 31).

Table 32 includes all respondents, i.e., whether practicing FP or not. Respondents presently using contraceptives were asked whether they had ever used any other method

TABLE 28
Percentage Distribution of Respondents by Method of Birth Control Being Used at Present, by District, and by Survey

Birth Control Method Being Used	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Oral pills	60.0	66.1	52.2	50.3	54.6	53.5
IUD	6.7	8.1	13.8	8.6	12.1	3.9
DMPA	—	1.6	—	3.7	7.8	11.0
Male sterilization	18.7	8.1	13.8	12.9	8.5	14.9
Female sterilization	9.3	14.5	6.5	20.9	15.2	12.3
Condom	4.0	1.6	13.8	3.0	1.3	1.3
Others	1.3	—	—	0.6	0.5	3.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(75)	(62)	(138)	(163)	(165)	(155)

TABLE 29
Percentage Distribution of Respondents by Source of FP Services, by District, and by Survey

Source of FP Services	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Hospitals	30.7	22.6	25.4	28.8	23.6	23.2
Provincial public health office	2.7	—	4.3	2.5	1.8	0.6
Health center	37.3	48.4	58.0	55.2	58.8	59.4
Midwifery center	16.0	17.7	0.7	0.6	1.8	—
Private clinic	2.7	3.2	2.2	3.0	5.5	8.4
Pharmacy or drug stores	9.3	8.1	5.1	3.7	5.5	5.8
Others	1.3	—	4.3	6.2	3.0	2.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(75)	(62)	(138)	(163)	(165)	(155)

TABLE 30
Percentage Distribution of Respondents by Reasons for Practicing FP at Present, by District, and by Survey

Reason of Practicing FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Health reasons, e.g., pregnancy or delivery dangerous	8.0	9.7	7.3	5.2	10.9	5.8
Age reasons, e.g., too young or too old	—	1.6	—	0.6	0.6	1.2
Economic reasons, e.g. too poor	36.0	35.5	8.7	30.0	27.9	30.3
Already have too many or enough children	42.7	37.1	64.5	43.6	43.0	45.8
Spacing	13.3	16.1	18.8	17.2	15.8	16.9
Others	—	—	0.7	3.4	1.8	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(75)	(62)	(138)	(163)	(165)	(155)

TABLE 31
Percentage Distribution of Respondents by Reason for Not Practicing FP, by District, and by Survey

Reason for Not Practicing FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
1. Health reasons, e.g., to avoid side effects	20.0	17.1	17.6	12.0	27.1	14.1
2. Want additional children because						

TABLE 31 (Continued)

Reason for Not Practicing FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
present number of children is lower than planned family size	9.3	13.6	17.1	14.1	12.7	7.0
3. Want a large family	1.3	1.1	1.4	—	—	0.8
4. Want an additional male/female child	6.7	5.7	6.9	7.9	—	8.6
5. Respondent/spouse/ relative does not approve of FP	—	15.9	0.5	—	3.4	—
6. Leaving it up to fate	37.3	33.0	25.9	20.9	0.8	23.4
7. Wife is pregnant at the moment	10.7	3.4	14.4	32.5	18.7	37.5
8. Difficult to receive services	—	10.2	—	—	17.8	—
9. Others	14.7	—	14.8	12.6	19.5	8.6
10. No answer	—	—	1.4	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(75)	(88)	(216)	(191)	(118)	(128)

TABLE 32
Percentage Distribution of Respondents by Whether or Not a Contraceptive Method Was Used in the Past, by District, and by Survey

Whether or Not Respondent Had Used a Contraceptive Method in the Past	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	30.0	32.7	23.2	35.9	35.0	33.6
No	70.0	67.3	76.8	64.1	65.0	66.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

in the past or if they had used a method, had stopped using it for some reason, and then resumed using the same method. Table 32 shows that between the pre- and the post-surveys only in Banphot Phisai was there a significant change.

From Table 33, it can be seen that there was much change between the pre- and post-surveys. In the post-survey more respondents would use or continue to use contraceptives in the next six months. Krok Phra had the highest level of change followed by Banphot Phisai and Phayuha Kiri, respectively. This table should be compared with Table 26, which shows the percentage distribution of respondents presently using contraceptives. The percentage of the respondents who thought they would use contraceptives, or continue using them, was higher than the percentage of respondents presently using these contraceptives. This was clearly shown in Krok Phra where there was a difference of 27.4 percent between the pre- and post-survey figures. However, the

TABLE 33
Percentage Distribution of Respondents by Whether or Not She/He Would Use Contraceptives (or Continue to Use Them) in the Next Six Months, by District, and by Survey

Whether or Not Respondent Will Use Contraceptives	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	56.0	68.7	58.8	64.9	60.4	71.7
No	33.3	30.0	37.0	30.6	34.6	25.8
Don't know	10.7	1.3	3.1	4.5	5.0	2.5
No Answer	—	—	1.1	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

data in Table 33 do not ensure that there would be a similar increase in the actual number of FP acceptors.

Table 34 shows that 50 percent of the respondents had discussed FP with others. These discussions occurred most frequently in Phayuha Kiri as reported in the post-survey. However, the highest level of change was shown in Banphot Phisai. On the other hand, Krok Phra had a decrease as shown in the post-survey. When asked who the respondent had discussed FP with, most said that they had discussed it with their neighbors. Among those who had not discussed FP with others, most replied that they did not have enough knowledge or information to carry on such a discussion with others.

TABLE 34
Percentage Distribution of Respondents by Whether or Not They Had Ever Discussed FP with Persons Other than Spouse, by District, and by Survey

Whether or Not Respondent Had Discussed FP	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	68.0	53.3	58.5	61.6	68.6	69.6
No	32.0	46.7	41.5	38.4	31.4	30.4
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

Table 35 shows the percentage distribution of respondents who had advised others to accept FP. Here it may be seen that only Banphot Phisai showed a positive change in the post-survey. It can also be seen that a fairly large number of the respondents not only discussed FP with their neighbors but also advised them to accept FP services.

Exposure to Family Planning Communication Media

The last part of this section discusses the different levels of communication exposure the respondents had in relation to the level of their family planning KAP.

Over 87 percent of the respondents had radios in their homes; very few respondents had television sets. Details are shown in Table 36.

Table 37 shows that the radio was the medium most frequently used by the respondents. Differences in the results of the two surveys suggest the respondents in the

TABLE 35
Percentage Distribution of Respondents by Whether or Not They Had Ever Advised Others to Accept FP Methods, by District, and by Survey

Whether or Not Respondent Had Advised Others	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	59.3	43.3	43.8	48.9	56.9	56.9
No	40.7	56.7	56.2	51.1	43.1	43.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 36
Percentage Distribution of Respondents by Ownership of Communication Channels, by District, and by Survey

Communication Channel Owned	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Radio	91.3	88.7	87.3	87.0	88.0	90.1
Television	12.7	2.7	2.8	7.0	5.1	13.4

Note: Multiple responses possible.

TABLE 37
Percentage Distribution of Respondents by Frequency of Exposure to Mass Media, by District, and by Survey

Frequency of Exposure to Mass Media	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Listening to the Radio						
More than 3 times a week	83.3	70.7	79.4	75.7	76.7	67.5
Three times a week to once a month	11.3	16.7	11.0	15.6	14.5	24.0
Less than once a month	5.3	12.6	9.6	8.8	8.8	8.5
Watching Television						
More than 3 times a week	16.7	2.7	4.0	9.6	8.8	13.0
Three times a week to once a month	20.0	14.7	15.3	11.6	20.1	15.2
Less than once a month	63.3	82.6	80.8	78.8	71.0	71.8
Reading Newspapers						
More than 3 times a week	19.3	9.3	9.3	7.0	8.1	12.0
Three times a week to once a month	31.3	32.0	26.2	19.8	28.6	35.7
Less than once a month	49.3	58.7	67.5	73.2	63.3	52.3

TABLE 37 (Continued)

Frequency of Exposure to Mass Media	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Watching Movies						
More than 3 times a week	6.7	0.7	1.4	1.1	3.5	6.4
Three times a week to once a month	15.3	20.7	22.9	18.0	22.6	22.6
Less than once a month	78.0	78.6	75.7	80.9	75.7	71.0

post-survey listened to the radio less than those in the pre-survey. The newspaper was the second most popular medium among the respondents. It should be noted that although Bangkok newspapers were available daily, local newspapers were usually available only at ten-day intervals. This could account for the much lower frequency of usage of newspapers when compared to radio. The television was the third most popular mass media type. Owing to their low economic status, very few of the respondents could afford to buy a television set. Besides, many villages do not have electricity. Movies were the least popular, although the percentages registered for this medium were not so different from those for television.

The radio was the most frequent source of FP information among the different types of mass media. Newspapers, television, and movies followed in descending order of frequency (see Table 38).

TABLE 38
Percentage Distribution of Respondents by Mass Media Source of FP Information, by District, and by Survey

Mass Media Source	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Radio	81.3	76.0	73.2	73.2	76.0	77.0
Television	22.7	10.0	8.5	13.6	11.7	17.7
Newspaper	36.0	27.3	20.3	19.8	22.6	26.7
Movies	22.0	14.0	12.7	7.6	11.7	19.4
TOTAL	100.0	100.0	100.0	100.0	100.0	
No. of respondents	(150)		(354)		(283)	

Note: Multiple responses possible.

The respondents were asked whether or not they had discussed FP with health personnel in the past three months. Table 39 shows that there was an increase in the number who did so in the post-survey in Phayuha Kiri and Banphot Phisai. However, the biggest increase was found in Phayuha Kiri. Krok Phra, on the other hand, showed a decrease. FP discussions with mobile motivation units showed a distinct increase in the post-survey of Phayuha Kiri. It was in this district that the mobile motivation unit operated during the study. A small increase in Banphot Phisai and a decrease in Krok Phra were also noted.

TABLE 39
Percentage Distribution of Respondents by Whether or Not They Had Discussed or Had Heard about FP from Health Personnel or Mobile Motivation Units, by District, and by Survey

Communication Media	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Health personnel	26.0	24.0	22.0	27.7	25.4	40.3
Mobile unit	24.0	18.7	9.0	11.9	20.0	52.3

Note: Multiple responses possible.

Respondents were also asked whether or not they were still interested in receiving FP information. Krok Phra had the highest level of respondents who said they were still interested. Phayuha Kiri and Banphot Phisai followed Krok Phra in this regard. An increase in all districts in the post-survey, most particularly in Banphot Phisai, was noted (see Table 40).

TABLE 40
Percentage Distribution of Respondents by Whether or Not They Were Still Interested in Receiving FP Information, by District, and by Survey

Whether or Not Interested	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Yes	75.3	88.7	69.2	83.9	76.3	87.3
No	20.0	8.0	27.1	12.4	17.0	9.2
Not sure	4.7	3.3	2.3	3.7	6.4	3.5
No answer	—	—	1.4	—	0.4	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

When the respondents were asked from where they had received most of their FP information, most of them named the radio. Health personnel were the second most informative source. The mobile motivation unit had a significant impact in Phayuha Kiri only. Post-survey results showed an increase in the number of respondents who said neighbors were the most informative source. A decrease in the number of respondents who had received FP information from the radio was noted in the post-survey (see Table 41).

Finally, the respondents were asked which type of communication media they preferred as a source of FP information. Results showed no significant differences between responses to this question (Table 41) and to that on the most informative source of FP information (see Table 41).

SUMMARY OF FINDINGS

Three districts were used as study areas with each one receiving different kinds of treatment. These districts and the treatments they received were as follows: Krok Phra, mass media activities only; Banphot Phisai, mass media and increased health personnel

TABLE 41
Percentage Distribution of Respondents by Source of Most FP Information, by District, and by Survey

Source of Most FP Information	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Radio	62.7	49.0	47.2	46.9	60.1	48.1
Television	1.3	0.6	0.8	2.0	1.8	5.3
Newspaper	2.7	1.2	1.7	2.3	2.5	1.8
Movies	—	—	—	0.3	0.7	—
Health personnel	14.0	23.3	25.7	26.0	16.6	21.2
Mobile unit	—	1.2	0.3	0.6	2.8	11.0
Spouse	—	0.6	4.8	—	5.6	—
Neighbor	12.0	20.0	15.0	20.6	5.3	12.4
Others	7.3	3.0	4.5	1.3	4.6	0.2
No answer	—	1.1	—	—	—	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

TABLE 42
Percentage Distribution of Respondents by Most Preferred Source of FP Information, by District, and by Survey

Preferred Source of FP Information	Krok Phra		Banphot Phisai		Phayuha Kiri	
	Pre-	Post-	Pre-	Post-	Pre-	Post-
Radio	65.3	53.3	48.0	51.7	57.3	47.3
Television	2.7	0.7	1.5	2.3	4.2	4.6
Newspaper	2.0	0.7	2.1	1.7	0.7	1.8
Movies	0.7	—	0.3	0.3	0.4	0.4
Health personnel	10.0	20.7	17.5	20.9	14.8	20.5
Mobile unit	0.7	0.7	0.8	1.1	3.2	10.2
Spouse	—	0.7	4.6	—	5.3	—
Neighbor	9.3	23.2	12.6	20.6	7.4	12.7
Others	9.3	—	12.6	1.4	6.7	2.5
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0
No. of respondents	(150)		(354)		(283)	

motivation; and finally, Phayuha Kiri, mass media, increased health personnel motivation, and the mobile unit. Pre- and post-surveys were conducted in all these areas before and after the three-month treatments. The comparison of the survey's results focused on the changes found between the two surveys within a district and the changes found in one district with those found in the other two districts.

The hypothesis was formulated on the assumption that an intensified repetition of the communication activities of the Family Planning Communication Development and Integrated Campaigns in a given area would increase the family planning KAP of the population there. Furthermore, it was assumed that the repetition of all the activities would achieve higher increases than the repetition of only some of these activities. The hypothesis was to be accepted if the results of the data analysis revealed the following

changes in the KAP level of the respondents: a low level of increase for Krok Phra, a medium increase for Banphot Phisai, and a high increase for Phayuha Kiri.

Results of the surveys did not warrant the acceptance of the above hypothesis. Although there was a slight increase in many of the KAP variables, these increases were, in many cases, too small to be considered significant. Moreover, decreases in the respondents' family planning KAP also occurred. No significant increase in the number of respondents who could define the term "family planning" was noted. Moreover, there was a decrease in the number of respondents who were able to name contraceptive methods. On the other hand, more respondents were able to recall contraceptive methods after the name of the method was read to them. However, these increases were generally too small to be considered significant, except perhaps in Banphot Phisai, where recall of information on female sterilization increased by 13.9 percent, and in Krok Phra and Phayuha Kiri, where information on condoms was recalled by more respondents, i.e., an increase of 17.5 percent and 14.6 percent, respectively. In Krok Phra, more respondents were able to recall and define the IUD. Finally, only Krok Phra showed a significant change in the number of respondents who knew about health centers, i.e., an increase of 11.3 percent. Given the above results it can be concluded that the treatments had resulted in almost no significant changes on the respondents' knowledge of FP.

Even in the pre-survey, attitudes were very positive or in agreement with FP ideas. Significant increases were found in the number of respondents who agreed that the practice of FP was one way to reduce family expenditure in Krok Phra. Similarly, a significant increase in the number of respondents who agreed that frequent childbirths were harmful to the mothers' health was noted in Banphot Phisai. Although no decreases were seen, many increases were considered too small to be significant. Attitudes of the respondents towards the community and FP showed significant changes when the results of the pre- and post-surveys were compared. More specifically, in Phayuha Kiri, there were increases in the number of respondents who agreed that most people in their villages agreed with FP, that newly married couples should be informed of birth control methods, and that local leaders or the respected people in the village should show interest in FP. In Banphot Phisai similar increases were found in the number of respondents agreeing with the second and third statements. The respondents' attitudes towards the country and FP were already favorable at the onset of this study. Hence, increases were small, and significant ones were found only in Phayuha Kiri and Krok Phra. In brief, it may be said that the treatments had an impact on the attitudes towards FP in the study areas. Many changes occurred in Phayuha Kiri and Banphot Phisai, though many of these changes were too small to be considered significant.

The respondents' practice of FP was measured by actual contraception and other acitivities related to FP. No significant change was expected in the respondents in terms of actual contraception because of the short duration of the treatments. Thus, the survey questions put more emphasis on the respondents' discussion of FP matters. It was found that there were almost no significant changes. It was, therefore, concluded that the treatment did not cause any change in the behavior of the respondents. Moreover, the number of new acceptors in the other districts of Nakorn Sawan were similar to the number found in the three study areas, further confirming that the treatments did not significantly affect the practice of FP among the respondents.

The results of the surveys show that the respondents' exposure to various media channels differ greatly with the type of media. The radio ranked as having the highest level of influence with about 75 percent of the respondents listening to the radio more than three times a week. Furthermore, about 88 percent of the respondents had a radio in their homes and 76 percent had heard of FP messages over the radio. Exposure to other media types was much lower. In descending order of popularity the other media types respondents were exposed to were newspapers, television, and movies.

During the study, the mobile team operated in Phayuha Kiri. In this district, it was observed that there was a marked increase in the number of respondents who had heard about FP from mobile motivation units. The increase, revealed in the post-survey, reached 32.3 percent. No such change was found in either Krok Phra or Banphot Phisai.

Motivation activities by health personnel increased in Banphot Phisai and Phayuha Kiri in the duration of the study. Consequently survey results showed an increase in the number of respondents who had discussed or heard of FP from health personnel. The increase was most evident in Phayuha Kiri. This means that the input of health personnel had an effect on the respondents, an outcome expected by the study. When the respondents were asked where they had received most of their FP information in the past, three main channels were identified. These were the radio, health personnel, and neighbors. Of the three, the radio was the most popular followed by health personnel, and then by neighbors. The respondents also seemed to prefer to receive FP information from these channels. It is quite accurate to state that the respondents were most exposed to the radio, followed by health personnel and neighbors, respectively. This was perhaps true even before the study began. However, one may suppose that if there had been more activity from the other channels, people might have been willing to use these channels as well. This was clearly seen in the case of the mobile unit. The coverage of the media also seemed to be one of the most important factors leading to the use of those channels. This was shown in the different mass media channels used.

CONCLUSIONS AND RECOMMENDATIONS

As previously stated, the treatments have, in general, been unsuccessful in changing the family planning KAP levels of the respondents. The only substantial change was found in their attitudes. Phayuha Kiri seemed to have the highest number of changes though it is rather difficult to distinguish which district actually changed the most. Banphot Phisai had many changes in terms of the respondents' attitudes but these were mostly minor changes. It should be concluded that there was no district that had an outstanding change in attitudes. As regards the respondents' exposure to communication media, survey results showed that the respondents did receive higher exposure to communication media and the pattern of exposure was similar to the treatment in each district. This means that the exposure to FP communication media did not lead to the expected results in the family planning KAP of the respondents. The treatments had been unsuccessful and, therefore, the study's hypothesis is rejected. The conclusion that the present communication activities have been unsuccessful in changing the family planning KAP of the respondents does not mean that the communication activities had been unsuccessful in the past. Rather, this information should be used to decide whether or not the same activities should be continued in the future. It should be remembered that the results of this case study are by no means sufficient for making any decisions on the whole project. Nevertheless, this study strongly suggests that more attention should be given to the effectiveness of FP communication activities. One of the problems revealed by the study was that the people had very positive attitudes towards FP but their knowledge of it was inadequate. This leads to the assumption that the communication campaigns were capable of promoting positive attitudes but that they were not effective in communicating ideas. The reasons for such an outcome may have been due to the content of the performance of these campaigns. For instance, the radio may have been very effective in terms of coverage but the adequacy of the information it disseminated may be questioned.

New approaches should be planned and tested. In this study, one of the approaches that seemed encouraging was the use of villagers themselves as motivators. This could lead to the employment of the "village volunteer" — a concept which has been given considerable attention in the recent years.

Finally, further studies should be carried out. These may include the following: effectiveness of FP communication activities by each method, factors causing the adoption of family planning KAP, and finally, content analysis of information disseminated by FP communication activities. These studies could provide more information on how future FP program activities should be planned and carried out.

SECTION IV

Other Selected Issues

THE ROLES OF HUSBANDS AND FATHERS IN FAMILY PLANNING IN RURAL CHIANG MAI, THAILAND

Luechai Chulasai

In many developing countries, failure of health staff to acknowledge male authority and to approach the family via the husbands and fathers can greatly heighten male resistance to family planning. Moreover, there are reasons for believing that men might be more motivated toward family planning than women. Men, as husbands and fathers, bear the major responsibility for providing food, clothing, and education for the family. These are mostly economic factors. Family planning is often thought to be a woman's business, but the rural man may have the decisive voice on matters concerning the family. Thus, he may be the person who determines the number of children he and his wife will have and whether or not to practice family planning. In many countries, national leadership in the field of family planning is in the hands of men, and they tend to emphasize only female participation in family planning (Bogue 1962: 511-514; Stycos 1962: 481-490; Mista 1967: 161-163).

Thailand is a developing country with family planning programs and services. However, there is very little family planning survey research concerning the roles of husbands and fathers. The Potharam Research Project (Institute of Population Studies 1971) and the Bangken KAP Survey (Burnight 1969) did not inquire into male attitudes and behavior. The first attempt at such an inquiry was made in the Rural South KAP Survey (Jones and Soonthorntham 1970). However, this study, like the Rural North KAP Survey (Jones and Rachpaetayakom 1970), did not emphasize the roles of husbands and fathers in family planning. In a rural society, where the young are considered to be subordinate to the old, and women subordinate to men, there is also a correspondingly greater emphasis on the authority of the father. The failure of a program to emphasize, or even to consider, the role of men in family planning, therefore, may make such a program less effective than it might be otherwise.

THE PLAN OF STUDY

The objectives of this research were:

1. to determine the roles of husbands and fathers in family planning in rural Chiang Mai;
2. to gather information on the family planning knowledge, attitudes, and practices of husbands and fathers in rural Chiang Mai; and
3. to provide information for further studies on family planning in rural Chiang Mai.

Sample Design

In Chiang Mai, there are about eight first-class health centers, 80 second-class health centers, and about 23 midwifery stations. A first-class health center has approximately ten beds and a minimum of one doctor, one nurse-midwife, two sanitarians or junior health workers, and one midwife. A second-class health center is staffed with a minimum of one sanitarian and one midwife, while a midwifery station is staffed with only one midwife.

Two districts (*amphoe*), Doi-saket and Mae-thang, in Chiang Mai were chosen to provide samples of married men. Doi-saket is located in the northeast and 20 kilometers from the city. Mae-thang is in the north, 40 kilometers from the city. Both districts have roughly the same number of health service centers (see Table 1). For the purpose of this study each district was divided into three strata, namely, the first-class health center, the second-class health center, and the midwifery station. The number of households in the area served by each stratum is seen in Table 1.

In each district a sample of 150 married men whose wives were of childbearing age (15-49) was selected. The selection procedure consisted of four stages.

1. Groups of villages (*tambol*) in areas served by the first-class health centers were automatically included in the sample area.
2. From the remaining two strata, seven *tambol* were selected in Doi-saket and six *tambol* were chosen in Mae-thang. Random sampling was used. More specifically, six *tambol* from the second-class stratum and one from the midwifery stratum were chosen for Doi-saket. For Mae-thang, five *tambol* were from the second-class stratum and one was from the midwifery stratum.
3. One village was randomly chosen from each of the selected *tambol* in both districts.
4. The proportion of the number of households in each village to the total number of households in the area served by each health service center was determined. The product of this proportion plus 150 gave the number of households to be sampled in the village. The selection of the households in each village by random sampling then followed.

A visit to each village included in the sample was made by the research team after the sampling process was completed.

Questionnaire Construction

The questionnaire was designed to collect information on aspects of "decision-making power" or "family authority" and the family planning knowledge, attitudes, and practices of the respondents. The problems of wording, sequence of the questions, and clarity of the preliminary questionnaire were discussed with an advisor and experienced researchers in the faculty of Chiang Mai University. Then the questionnaire was rewritten and pretested on the villagers living near Chiang Mai University. After this pretest,

TABLE 1
Number of Available Health Services and Number of Households in Areas Served by Type of Health Service

Type of Health Service	Doi-saket District			Mae-thang District		
	No. of Health Services	No. of Households in Area Served		No. of Health Services	No. of Households in Area Served	
		Total	Sample		Total	Sample
First-class	1	1,816	33	1	1,244	18
Second-class	6	6,518	108	5	6,518	98
Midwifery station	1	456	9	1	2,209*	34
TOTAL	8	8,790	150	7	9,971	150

*Excludes Tambol Pa-pae, location of hilltribes that are difficult to reach.

further discussions were held before rewriting some items. A second pretest was conducted with villagers who lived near the sample villages in Doi-saket and Mae-thang.

Interviewing and Coding of Interviews

Ten male students, who spoke the northern language and had studied research methodology or who had had experience in interviewing, were given two days training before starting the field survey. The questions on contraceptive practice were discussed by an experienced family planning officer. On the second day of training (a half-day session) the interviewers conducted supervised interviews with villagers.

Before the field survey began, the research team had sent letters to heads of the villages to inform them of the purpose of the study and to schedule the interviews. Because the villages were far apart, the research team was divided into two groups. The field survey went well, with the respondents and the villagers cooperating fully. Interviewing took approximately 30 minutes per respondent.

Coding instructions were prepared by the project leader and the research team. Completed interviews were coded by the interviewers themselves, and were recoded by another interviewer as a check. Inconsistencies in the two sets of coding sheets were reconciled by the project leader.

Data Processing

It was earlier planned to use one of the computer facilities in Bangkok, Thailand for data processing. However, the project leader and a member of the research staff had to leave Chiang Mai University for further studies. Therefore, it was decided to use electric calculators that were available in Chiang Mai University. Computer analysis was later done at the Center for Advanced Computation, University of Illinois, Urbana-Champaign, where the project leader is now a doctoral student.

RESULTS OF THE STUDY

The data obtained by this study have been grouped into the following: characteristics of the respondents, their knowledge, attitudes, and practice of family planning, the roles of husbands and fathers, and finally, the relationship between decision-making on the practice of birth control methods and selected demographic, socio-economic, and marital characteristics.

Characteristics of the Respondents

Almost all (98.7 percent) of the respondents in the sample were born in the rural areas. Less than two percent were born in the urban areas. More than half (55.6 percent) were in the 25 to 44 age group; 38.6 percent were over 45 years old. The remainder (5.6 percent) fell in the 15 to 24 age group. About 66 percent of the sample had four years of education (elementary school), while seven percent had more than four years. Only nine percent had no school certificates. Four fifths (81 percent) were engaged in agriculture and 18.3 percent were in non-agricultural occupations, e.g., handicrafts, office work, etc. Less than one percent (0.7 percent) were not working. The sample in this study parallels the characteristics of Thailand's rural population. Finally, two thirds of the sample belonged to nuclear families and 30 percent to extended nuclear families.* The remainder (2.7 percent) were either separated or divorced. Table 2 summarizes data on the 300 respondents' characteristics.

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*A nuclear family refers to a family with one married couple with or without children. An extended nuclear family is a nuclear family with a relative of either side. For a detailed classification scheme of family type, see Suchart Prasithrathsint, *Family and Household Structure in Thailand,* a paper presented at ODA conference, Manila, 18–22 December 1972.

TABLE 2
Distribution of Respondents by Characteristics

Characteristic	No.	%
Age (years)		
15-19	1	0.3
20-24	16	5.3
25-29	25	8.3
30-34	28	9.3
35-39	59	19.7
40-44	55	18.3
45-49	58	19.3
50-54	32	10.7
55-59	16	5.3
60 and above	10	3.3
Level of Literacy		
No schooling	26	8.7
1-3 years	54	18.0
4 years	197	65.7
5-10 years	14	4.6
10 years and above	6	2.0
Informal education	3	1.0
Occupation		
Agricultural occupations	243	81.0
Non-agricultural occupations	55	18.3
Not working	2	0.7
Type of Family		
Nuclear family	202	67.3
Extended nuclear family	90	30.0
Separated or divorced	8	2.7
TOTAL	300	

Knowledge, Attitudes, and Practice of Family Planning

The respondents were classified into two groups according to their knowledge of the methods of contraception: those who just knew about methods of contraception, and those who actually knew how to use them. The sources of information on contraception were also determined. The attitude of the respondents towards family planning was defined in terms of whether they approved or disapproved of the practice of birth control. The reasons for this attitude were also examined.

Another consideration was the birth control practices of the respondents and their wives. In general, it was found that the respondents' wives were the users of contraceptives. (Only one respondent reported using the male sterilization method.) It could not be ascertained, therefore, which methods were reliable or non-reliable for males. Discussions with the respondents about contraception methods, however, showed that they tended to feel sterilization (for males or females) was reliable, but that this method was not suitable for males.

Knowledge of Family Planning

In the Jones and Rachapaetayakom study (1969) on the rural north of Thailand, 51 percent of the respondents reported having knowledge of birth control methods. In contrast, the present study had 80 percent of the respondents reporting this knowledge. It should be noted, however, that one third of the sample in this study (Ban Pong village) was in Mae-thang district, where the McCormick family planning mobile project is located, and has been operating for many years. This might have had an effect on the results of this study.

Table 3 shows the extent of the respondents' knowledge of specific methods of contraception, i.e., only known or know how to use. A noteworthy feature of Table 3 is the ranking of the birth control methods. In the "only know" category sterilization ranked first with the pill and injection coming next. In the "know how to use" category the order was practically reversed. Pills came first, followed by injection, and then by sterilization. It should be noted that 16 percent of the respondents had only knowledge of the condom, but only four percent knew how to use it. Most of these respondents added that they used the condom not for practicing birth control but for preventing venereal disease when visiting brothels.

TABLE 3
Extent of Respondents' Knowledge of Specific Contraception Methods

	Extent of Knowledge			
	Only Know		Know How to Use	
Method	No.	%	No.	%
Sterilization	108	27.9	52	17.7
Pill	93	24.0	117	39.8
Injection	74	19.1	90	30.6
Condom	62	16.0	12	4.0
IUD	39	10.1	21	7.1
Cap or diaphragm	11	2.8	2	0.7
TOTAL	387	99.9	294	99.9

Attitude Towards Family Planning

Seventy-eight percent of the respondents approved of practicing birth control while 17 percent disapproved. Of those who approved, 88 percent did so because of economic reasons. The other reasons were to give children better living conditions, for the health of the mothers, and others. Among the respondents who disapproved of practicing birth control, the most frequently given reason was the fear of harmful effects (23.5 percent). Others mentioned that "there will be few people" (17.6 percent) or gave religious or moral reasons (13.7 percent). Table 4 details these findings.

Practice of Family Planning

Only one in 300 respondents practiced contraception by the sterilization method. The others answered that females should practice birth control because males have to work harder than females. The number of respondents' wives using various methods of contraception are shown in Table 5.

TABLE 4
Attitude Towards Family Planning and Reasons for Approving or Disapproving the Practice of Birth Control

Attitude & Reason	Reason		Attitude	
	No.	%	No.	%
Positive Attitude			234	78
Economic reasons	206	88.0		
To give children better living conditions	5	2.1		
For the health of the mother	3	1.3		
Others	20	8.6		
TOTAL	234	100.0		
Negative Attitude			51	17
Harmful effects of birth control	12	23.6		
"There will be few people"	9	17.6		
Religious or moral reason	7	13.7		
Parents like children	2	3.9		
Some children die	1	2.0		
Others	20	39.2		
TOTAL	51	100.0		
Neutral Attitude			8	2.7
No Information/No Answer			7	2.3
TOTAL			300	100.0

TABLE 5
Distribution of Respondents' Wives by Method of Contraception

Method Used	No.	%
Pills	62	51.2
Injection	30	24.8
Sterilization	14	11.6
IUD	6	5.0
Use no method	9	7.4
TOTAL	121	100.0

Roles of Husbands and Fathers

To determine who makes major decisions in the family, decision-making questions concerning the children's education, children's marriages, children's occupations, expenditure in the house, purchase of major household equipment, family size, and birth control methods used were asked. The results are shown in Tables 6 and 7. Table 7 is concerned only with decisions relating to family planning.

Results show that the families in this study tended to be influenced by modernization and urbanization. The tendency among young people to choose their own partners as

TABLE 6
Decision-making Patterns: Selected Concerns

Decision-making Pattern	Selected Concerns									
	Children's Education		Children's Marriage		Children's Occupation		Expenditure in the House		Purchase of Major Household Equipment	
	No.	%	No.	%	No.	%	No.	%	No.	%
Husband decides alone	140	46.7	55	18.3	109	36.3	95	31.7	135	45.0
Together but husband dominates	30	10.0	15	5.0	19	6.3	17	5.7	18	6.0
Together	95	31.7	57	19.0	52	17.3	66	22.0	77	25.7
Together but wife dominates	0	—	0	—	1	0.3	26	8.7	10	3.3
Wife decides alone	8	2.7	3	1.0	2	0.7	94	31.3	32	10.7
Their children	14	4.7	161	53.7	107	35.7	—	—	—	—
Non-applicable	7	2.3	7	2.3	7	2.3	—	—	13	4.3
Don't know and no answer	6	2.0	2	0.7	3	1.0	2	0.7	15	5.0
TOTAL	300	100.0	300	100.0	300	100.0	300	100.0	300	100.0

TABLE 7
Decision-making Patterns: Family Planning Matters

Decision-making Pattern	Family Planning Matters			
	Family Size		Practicing Birth Control	
	No.	%	No.	%
Husband decides alone	124	45.3	24	22.0
Together but husband dominates	23	8.4	12	11.0
Together	86	31.4	42	38.5
Together but wife dominates	8	2.9	16	14.7
Wife decides alone	10	3.6	15	13.8
No choice in the no. of children	23	8.4	—	—
TOTAL	274*	100.0	109**	100.0

* Excludes those who said they were too old.
** Excludes those who were not practicing birth control and those who said they were too old.

well as their occupations has become widespread. According to 53.7 percent of the respondents, young people make their own decisions about marriage, while 35.7 percent reported that young people choose their occupations (see Table 6). However, only a few of the respondents (4.7 percent) said that young people make their own decisions on their education, since their families have to take care of them during the time they attend school. Regarding expenditure at home, the respondents reported that the couples were the decision makers, but for purchasing major household equipment, husbands were the decision makers. This is because they are the breadwinners in the family.

According to the husbands, decisions on family size were made by them alone (see Table 7). By bearing the considerable expenses of having children, the husbands felt that they had the responsibility for the children. However, one third of the respondents answered that both husband and wife decided together on the size of their family. It should also be noted that about ten percent of the respondents said they had no control on the choice of family size. This could mean that some respondents had no knowledge of family planning.

It is interesting to note that the decision to practice birth control was most often made by couples together. However, Tables 6 and 7 taken together show that the husbands still played a major role in decision-making.

Relationship Between Decision-making Patterns and Selected Demographic, Socio-Economic, and Marital Characteristics

In the preceding section it was shown that the husbands had some influence on the decision to practice birth control. How are these decision-making practices affected by some demographic, socio-economic, and marital characteristics of the respondents?

The first demographic characteristic considered was the age of the respondents and wives. Analysis showed that younger husbands (20–29 years) tended to make the major decision on the practice of birth control alone, while among the older ones, husbands and wives together were the decision makers. It is interesting to note that the number of

TABLE 8
Decision-making Patterns by Demographic Characteristics

Demographic Characteristic	Decision-making Patterns										
	Husband Alone		Together but Husband Dominates		Together		Together but Wife Dominates		Wife Alone		
	No.	%	No.	%	No.	%	No.	%	No.	%	Total
Husband's Age at Last Birthday											
Below 20							1	*			1*
20–29	10	43.5	4	17.4	6	26.1	1	4.3	2	8.6	23
30–39	7	15.0	4	8.5	19	40.4	8	17.0	9	19.1	47
40 and above	7	18.4	4	10.5	17	44.8	6	15.8	4	10.5	38
TOTAL											109**
Wife's Age at Last Birthday											
Below 20	3	*	—		1	*	—		1	*	5*
20–29	12	27.3	9	20.5	14	31.8	4	9.0	5	11.4	44
30–39	4	9.3	3	6.9	19	44.2	10	23.3	7	16.3	43
40 and above	5	29.3	—		8	47.1	2	11.8	2	11.8	17
TOTAL											109
No. of Living Children											
1	12	21.8	7	12.7	22	40.1	8	14.5	6	10.9	55
2	6	18.2	3	9.1	11	33.3	5	15.2	8	24.2	33
3 and above	4	23.5	1	5.9	8	47.1	3	17.6	1	5.9	17
No information	2	*	1	*	1	*	—		—		4*
TOTAL											109

* Total no. of cases is less than 10.
** Excludes those who were not practicing birth control and those who said they were too old.

children did not seem to influence decision-making on practicing birth control. The couples dominated in the decisions, regardless of the wife's age or the number of children (see Table 8).

The decision-making patterns on the practice of birth control seemed to vary among respondents with different socio-economic characteristics. Among the families with incomes lower than 400 baht per month, husbands alone made the major decision. However, among those with incomes higher than 400 baht per month, the decision on practicing birth control was shared by the couple. It was difficult to infer the effect of education on decision-making practices regarding birth control. Most of the respondents had a common educational background, with only a few (6.6 percent) having more than four years of schooling (see Table 2). The respondents who engaged in agriculture made the major decisions on practicing birth control while this was less true of those who engaged in non-agricultural occupations (see Table 9).

The duration of marriage was another factor that affected decision-making on the practice of family planning. It was found that the husbands alone made the major decisions in marriages of shorter duration, i.e., under five years. However, among longer married couples, i.e., more than five years, the decision on practicing birth control involved both husband and wife (see Table 10).

The preceding sections and tables (8-10) described the relationships between decision-making on the practice of birth control and certain demographic, socio-economic, and marital characteristics. The following section investigates the association between these variables with the use of the chi-square (χ^2) test.

Since the samples in this study are not large enough to permit the use of many categories (see Tables 8, 9, and 10), a regrouping of the categories in each variable had to be made. The results of this process are shown in Tables 11, 12 and 13.

SUMMARY AND CONCLUSIONS

It was found in this study that husbands still have a major influence in the family although modernization and urbanization seemed to have affected family life. The data indicated that the knowledge of birth control methods was very high, with about 80 percent of the respondents reporting this. However, only four percent had knowledge of the condom as a method of birth control. The private personal communication between husbands and wives, relatives, and medical personnel was the major means of communicating information about family planning. In this study 78 percent of the respondents approved of practicing birth control, economic factors being the main motivation. The husbands who disapproved of this practice were mainly afraid of being harmed by birth control methods. Only 35 percent of the wives were practicing contraception; and only one male used the male sterilization method. It was reported by the majority of the respondents that females have the responsibility of practicing birth control. Furthermore, the men believed that sterilization of the male would result in loss of physical strength and inability to work. This attitude was characteristic of respondents who engaged in agriculture.

In the analysis of the roles that husbands play in the decisions regarding children's marriages and occupations, it was found that the family seemed to be influenced by modernization and urbanization. Fifty percent of the respondents reported that the children themselves made the decision on marriage and 35.7 percent said that the children chose their own occupations. Concerning expenditure in the home, the husbands and wives were joint decision makers, though for the purchase of major expensive household equipment, the husbands were generally the sole decision makers. Husbands were also primarily responsible for the decision on family size. But, the decision on birth control methods used was made jointly by couples.

TABLE 9
Decision-making Patterns by Selected Socio-Economic Characteristics

Socio-Economic Characteristic	Decision-making Patterns										
	Husband Alone		Together but Husband Dominates		Together		Together but Wife Dominates		Wife Alone		
	No.	%	No.	%	No.	%	No.	%	No.	%	Total
Monthly Family Income											
Below B200	6	27.3	3	13.6	5	22.7	5	22.7	3	13.6	22
B201-400	9	29.0	4	12.9	8	25.8	6	19.4	4	12.9	31
B401 and above	7	13.5	5	9.6	27	51.9	5	9.6	8	15.4	52
No information	2	*			2	*	—		—		4*
TOTAL											109**
Husband's Education											
No schooling	1	*	1	*	1	*	1	*	—	—	4*
1-3 years	4	20.0	3	15.0	5	25.0	5	25.0	3	15.0	20
4 years	17	23.6	7	9.7	30	41.7	10	13.9	8	11.0	72
Above 4 years	2	15.4	1	7.7	6	46.2	—	—	4	30.8	13
TOTAL											109
Wife's Education											
No schooling	1	*	—	—	3	*	1	*	—	—	5*
1-3 years	3	23.1	3	23.1	3	23.1	4	30.7	—		13
4 years	20	24.1	8	9.6	32	38.6	10	12.0	13	15.7	83
Above 4 years	—	—	1	*	4*	*	1	*	2*	*	8*
TOTAL											109
Primary Occupation											
Agriculture	19	25.3	10	13.3	24	32.1	13	17.3	9	12.0	75
Non-agriculture	5	14.7	2	5.9	18	53.0	3	8.8	6	17.6	34
TOTAL											109

* Total no. of cases is less than 10.
** Excludes those who were not practicing birth control and those who said they were too old.

TABLE 10
Decision-making Patterns by Duration of Marriage

Duration of Marriage (years)	Decision-making Patterns										
	Husband Alone		Together but Husband Dominates		Together		Together but Wife Dominates		Wife Alone		
	No.	%	No.	%	No.	%	No.	%	No.	%	Total
Below 5	9	47.4	4	21.1	2	10.5	2	10.5	2	10.5	19
5–10	2	10.0	3	15.0	9	45.0	4	20.0	2	10.0	20
11–14	6	18.8	3	9.4	13	40.6	5	15.6	5	15.6	32
15–19	3	14.3	1	4.8	10	47.6	2	9.5	5	23.8	21
20 and above	4	23.5	1	5.9	8	47.0	3	17.7	1	5.9	17
TOTAL											109*

* Excludes those who were not practicing birth control and those who said they were too old.

TABLE 11
Decision-making Patterns by Demographic Characteristics

Demographic Characteristic	Decision-making Patterns: Husband* No.	%	Together No.	%	Wife** No.	%	Total
Husband's Age at Last Birthday							
Below 30	12	50.0	8	33.3	4	16.7	24
30 and above	22	25.9	36	42.3	27	31.8	85
TOTAL							109†
χ^2 = 6.22 with 2 degrees of freedom; significance = 0.5							
Wife's Age at Last Birthday							
Below 30	24	49.0	15	30.6	10	20.4	49
30 and above	12	20.0	27	45.0	21	35.0	60
TOTAL							109†
χ^2 = 8.47 with 2 degrees of freedom; significance = .01							
No. of Living Children							
Below 3	28	31.8	33	37.5	27	30.7	88
3 and above	5	29.4	8	47.1	4	23.5	17
TOTAL							105††
χ^2 = 3.96 with 2 degrees of freedom; significance = .14							

* Includes category of "Together but husband dominates".
** Includes category of "Together but wife dominates".
† Excludes those who were not practicing birth control and those who said they were too old.
†† Excludes those who were not practicing birth control, those who said they were too old, and those who gave no answers.

TABLE 12
Decision-making Patterns by Selected Socio-Economic Characteristics

Socio-Economic Characteristic	Decision-making Patterns: Husband* No.	%	Together No.	%	Wife** No.	%	Total
Monthly Family Income							
Below B400	22	41.5	13	24.5	18	34.0	53
B400 and above	12	23.1	27	51.9	13	25.0	52
TOTAL							105†
χ^2 = 7.92 with 2 degrees of freedom; significance = 0.2							
Husband's Education							
Below 5 years	33	34.4	36	37.5	27	28.1	96

TABLE 12 (Continued)
Decision-making Patterns by Selected Socio-Economic Characteristics

Socio-Economic Characteristic	Decision-making Patterns						
	Husband*		Together		Wife**		
	No.	%	No.	%	No.	%	Total
5 years and above	3	23.1	6	46.2	4	30.7	13
TOTAL							109††
χ^2 = .92 with 2 degrees of freedom; not significant							
Wife's Education							
Below 5 years	35	34.7	38	37.6	28	27.7	101
5 years and above	1	12.5	4	50.0	3	37.5	8
TOTAL							109††
χ^2 = .77 with 2 degrees of freedom; not significant							
Occupation							
Agriculture	29	38.7	24	32.0	22	29.3	75
Non-agriculture	7	20.5	18	53.0	9	26.5	34
TOTAL							109††
χ^2 = 4.39 with 2 degrees of freedom; significance = .11							

* Includes category of "Together but husband dominates".
** Includes category of "Together but wife dominates".
† Excludes those who were not practicing birth control, those who said they were too old, and those who gave no answers.
†† Excludes those who were not practicing birth control and those who said they were too old.

TABLE 13
Decision-making Patterns by Duration of Marriage

Duration of Marriage (years)	Decision-making Patterns						
	Husband*		Together		Wife**		
	No.	%	No.	%	No.	%	Total
Below 5	13	68.4	2	10.5	4	21.0	19
5-10	5	25.0	9	45.0	6	30.0	20
Above 10	18	25.7	31	44.3	21	30.0	70
TOTAL							109†
χ^2 = 12.77 with 4 degrees of freedom; significance = 0.1							

* Includes category of "Together but husband dominates".
** Includes category of "Together but wife dominates".
† Excludes those who were not practicing birth control and those who said they were too old.

Finally, the influence of selected demographic, socio-economic, and marital characteristics on decision-making practices regarding birth control was examined. Results showed that younger husbands (21–29 years old) engaged in agriculture and with lower incomes (400 baht or less per month) tended to be the dominant decision makers. This was particularly true of those married for less than five years. Education did not seem to be a significant factor in the decision-making process.

In conclusion, the findings of this study indicate a need for more attention to the roles of husbands and fathers in family planning. With increased emphasis on these roles greater effectiveness could be achieved by family planning programs.

THE FERTILITY BEHAVIOR OF FILIPINO WOMEN ENTREPRENEURS

Sherry Jane Gonzalez-Marbella

A DEMOGRAPHIC AND SOCIO-ECONOMIC PROFILE

The exposure of the women entrepreneurs to certain social and economic forces in Philippine society, far more than the average Filipino woman, was responsible for drawing them into the profit-oriented system and the rewards it offers. These forces, in a capsule, were the following: upbringing in the country's principal urban center and areas readily accessible to it; higher education; academic training in business and in the people-oriented disciplines of the social sciences; independent business ownership, and commercial and manufacturing pursuits.

The women entrepreneurs in this study are in the peak of their careers. They are high achievers and are generally first or middle-born children. The overwhelming majority of women entrepreneurs were born and raised in Metro Manila and in the adjacent Luzon provinces. The rest came from the Visayas, principally Negros Oriental and Iloilo. It is worthy to note that Metro Manila is the country's premier urban and industrial center while Luzon is the most highly developed region in the Philippines. As a group, the women are highly educated. Seventy-one percent attended college, their academic training being mainly in business administration and in the social sciences.

Their commitment to business ownership was inherited to a considerable extent from their parents of whom 46 percent of the fathers and 47 percent of the mothers were independent business people. A fifth of the entrepreneurs were also occupationally independent at the onset of their careers and almost one half were active in business just before manufacturing entrepreneurship.

The most prominent industrial legacies of the entrepreneurs' parents were in manufacturing and commercial pursuits. A notable degree of manufacturing legacy is evident as 20 percent of the fathers and 20 percent of the mothers were engaged in it. On the other hand, 26 percent of the mothers and 13 percent of the fathers were involved in commerce.

Commerce and manufacturing were the predominant industries at the start of the women's careers and shortly before they went into manufacturing entrepreneurship. The sole founders were mainly engaged in commerce and the co-founders, in manufacturing. Those in commerce were provided with the capital to embark on entrepreneurship by their business activity. Those in manufacturing, on the other hand, were artisans whose skills as well as desire for greater profits and to have their own business eventually led them to set up their own independent enterprises.

The entrepreneurs are dynamic businesswomen, engaged not only in one but in several other business concerns. They belong to the upper-income bracket, half of them jointly earning with their husbands incomes of over P60,000 a year and 75 percent upwards of P30,000 a year.

ENTREPRENEURSHIP IN MANUFACTURING

The desire for greater monetary returns, or the "profit motive," spurred the entrepreneurial initiative in a majority of the sole founders and co-founders. For the rest, the motivation was mainly the wish to have their own business or the "independence" idea.

The women co-founders embarked into entrepreneurship at a younger age than the sole founders. Eighty-six percent of the co-founders were 40 years or younger when they set up their enterprises as against 60 percent of the sole founders. A major reason for the age difference is that the co-founders set up their business as their family's principal means of support, hence, the younger age at founding. The sole founders, on the other hand, were frequently not the main source of support for their family and hence, they may not have had the immediate urge to enter into entrepreneurship.

The majority of the firms were established no more than ten years ago. Most of them were sole proprietorships whose initial capitalization came from personal resources and, to a lesser extent, from the family of orientation. Their venture capital was smaller than what was actually needed. Few could meet bank loan requirements, but those who did, started relatively larger projects. The firms established were mainly very small. Sixty-eight percent had no more than ten workers intitially and 84 percent had 20 or less.

Financing was the major problem faced by the entrepreneurs in establishing their firms. This was followed by the shortage of skilled workers, lack of technical know-how, marketing, and competition problems.

Most of the firms have remained as sole proprietorships although the number of corporations has increased to make up a third of the firms founded by the spouses and a fifth of those founded by the women alone. The popularity of sole proprietorships stems from the ease with which businesses of this form can be established as well as from the small scale of operations and capital requirements, the inexperience and desire for independence of the entrepreneurs. The firms that changed to corporations did so in order to generate more funds and for tax purposes.

All of the entreprises are family-owned and the overwhelming majority are owned by the entrepreneurs and their immediate families. Over the years, the enterprises have grown in scale of operations. At present, 21 percent have a work force of over 50 as against none in the first year. Moreover, only 27 percent have ten or less workers now as against 68 percent during the first year. The firms jointly managed by the spouses generally have more workers than those managed by the women alone.

At present there has been an increase in the number of women entrepreneurs who provide the technical expertise and supervision of production in their firms. This is especially true among the sole managers of whom 73 percent are the major sources of technical know-how in their firms.

The problems faced by the firms have not changed through the years. Financing still heads the list followed by difficulties posed by marketing, competition, and the shortage of skilled workers. The only change is a notable improvement in technical know-how, now much less of a problem than in the past. There are few differences in the problems mentioned by the women who manage the business alone and those who manage with their husbands except for the problems of financing, high prices, and unavailability of raw materials. These are faced by more of the co-managers because their firms are larger and hence, have greater financial and raw material requirements.

The majority of entrepreneurs prefer to invest in undertakings that require little capital, a short period of waiting, and a quick turnover. This preference bespeaks of a past association with the trading sector and its impatience with the slow returns of heavier investment. If, however, the women would want their business to grow from small to medium or large scale, they will have to rid themselves of this small-scale attitude and

think in terms of larger investments with long-term flow which is more consonant with the requirements of the non-traditional industrial sector.

THE ENTREPRENEUR AS A WOMEN IN BUSINESS

The women entrepreneur occupies a unique position in the business world — because she is a woman. Are there advantages or disadvantages to her being a female in her occupation?

Ninety percent of the women entrepreneurs claim that being a woman has its advantages in business. The woman is able to convince clients easily and get their confidence especially when they employ their feminine charms. Several entrepreneurs also feel that being women, they have greater aesthetic ability as well as a flair for designing products which cater to the needs of women, they are given more deference and respect especially by male clients during business transactions, they are more patient in dealing with workers and clients, they are meticulous with workmanship, and they draw workers closer to them because they are motherly.

A full two fifths of the women report not having encountered any problems arising from the peculiar attributes of their sex. Among those who have, the most prevalently mentioned is the woman's lack of courage, weakness of spirit, and lack of emotional control. Specifically this means fear of taking greater business risks and lack of emotional stamina to cope with the odds in the business. This is followed by the difficulty of handling workers and lack of physical stamina to cope with the demands of the business.

Given these advantages, how may a woman succeed in business? To the entrepreneurs, success comes with hard work, patience in dealing with personnel and clients, and good public relations.

BLENDING MARRIAGE AND OCCUPATION

Homemaking is a full-time job for most married women. Those who pursue an occupational role, on the other hand, find themselves dividing their time between home and work, each of which has its own unique demands on the women. Entrepreneurship is a full-time occupation requiring a considerable amount of the woman's time and energies. How does the woman entrepreneur manage to blend this role with that of wife and mother?

For a third, having the business at home allows for the discharge of home and business obligations simultaneously. For the rest, careful budgeting of one's time is the primary means of coping, with emphasis being placed on fulfilling first responsibilities in the home.

The sole managers tend to feel more apprehensive than the co-managers about not being able to meet their home roles. They are more inclined to set up their business close to the home, have more limited hours of work as well as more flexible schedules than the co-managers. This is probably because when spouses co-manage an enterprise, the husband, who fully understands his wife's business responsibilities, is more tolerant of her shortcomings in the home.

Problems cannot be avoided when one combines the wife-mother role with an occupational role. Foremost of these as perceived by the entrepreneurs is strain on family relations followed by difficulties in household management. Their occupational tasks make it necessary for the women entrepreneurs to delegate part of their domestic functions. The performance of household chores and routine care of children are the most readily delegated. The more important and less time-consuming activities of disciplining the children, keeping and budgeting the family finances, and care of the husband's daily needs are hardly delegated.

Decision-making patterns in the home between the entrepreneur and her husband are characterized by sharing as well as segregation based on traditional systems of male-

female role allocation. The woman has the main prerogative in matters related to household chores, care of children, and the keeping and budgeting of finances. Husband and wife, on the other hand, share authority in matters related to the discipline of children, livelihood, social relationships, and recreation.

The entrepreneurs were asked to enumerate what they felt were their duties and responsibilities in general. The most prevalent answer that emerged had to do with business performance followed by wife-mother duties. The preponderance of business-related duties is not contradictory, however, to the women's concern for their families because it is actually an extension of their role as additional family provider.

SOME ASPECTS OF FERTILITY BEHAVIOR AMONG WOMEN ENTREPRENEURS

For a majority of the entrepreneurs, the ideal family size is no more than four children ($\chi^2 = 163.72$, $p < .001$). Thirty-nine percent want four, 23 percent want three, and 18 percent want two. The ideal childspacing for them is between two and three years ($\chi^2 = 123.5$, $p < .001$). We note that these figures are quite close to the actual average childspacing scores of the women. The majority of the entrepreneurs do not want to increase their present family size. A full 75 percent do not want to have any more children than they do now; 15 percent want one more child ($\chi^2 = 153.2$, $p < .001$). Ninety percent of the women favor limiting the number of children born to a family. Generally, the women who favor limiting family size have had fewer pregnancies than those who do not. Rhythm is significantly the preferred family planning method of the majority ($\chi^2 = 256.0$, $p < .001$).

There appears to be little association between educational attainment and fertility behavior among the women except that those who had only a high school education have a higher mean pregnancy rate than those who attended college or graduate school and those who reached the elementary level only (Table 1). On the other hand, there are proportionately more women who have practiced family planning as one moves up the educational ladder (Table 1). Only a fourth of those who attained only an elementary education ever practiced some form of family planning; close to 30 percent of those who reached high school did; 46 percent of the college educated have practiced it; and 90 percent of those who went to graduate school are family planning practitioners.

TABLE 1
Mean Pregnancy Rate, Average Childspacing, and Family Planning Practice of Entrepreneurs Classified by Educational Attainment

Educational Attainment	Mean Pregnancies	Average Childspacing	FP Practice		No.
			Yes	No	
Elementary	5.00	2.91	3	9	12
High school	6.82	2.18	5	12	17
College	4.87	2.24	28	33	61
Graduate school	4.91	2.51	9	1	10

Income likewise shows practically no relation to fertility behavior although it appears to be related to family planning practice (Table 2). The data reveal that there is more tendency to practice family planning as income increases.

Using the Cantril ladder system, the entrepreneurs were queried about their perception of the quality of their life. Results show that the foremost concern of the

TABLE 2
Mean Pregnancy Rate, Average Childspacing, and Family Planning Practice of Entrepreneurs Classified by Income

Income Level	Mean Pregnancies	Average Childspacing	FP Practice		No.
			Yes	No	
Below P12,000	4.00	1.75	1	2	3
P12,000-P29,999	5.95	2.26	5	15	20
P30,000-P59,999	5.10	2.44	10	11	21
P60,000 and above	5.50	2.42	25	17	42
Refused to reveal income	4.29	1.96	4	10	14

women is not the material comforts of life but rather, having a harmonious and wholesome family life. Their ladder ratings of the quality of their life, however, seem to point out that they were responding in economic terms. Entrepreneurs saw themselves as being in the lower half of the ladder prior to entrepreneurship, as being from the fifth to the eighth rung at present, and as being in the topmost rung ten years hence.

SELECTED FERTILITY BEHAVIOR CORRELATES

One of the most important objectives of this study was to determine the fertility behavior of women entrepreneurs and the relation of certain variables to it. Among the various correlates of fertility behavior, three were believed to be important in their ability to influence the fecundity of women. These were:

1. the extent to which women need to be freed from the tasks of child rearing and close home management supervision,
2. the extent to which children stand for the value of economic security to parents, and
3. the extent to which conjugal relationships are egalitarian.

It was hypothesized that:

1. the greater the need of women to be freed from the tasks of child rearing and close home management supervision, the lower the fertility behavior;
2. the less the extent to which children stand for the value of economic security to parents, the lower the fertility behavior; and
3. the more egalitarian the conjugal role relationship, the lower the fertility.

This study assessed the relationships of the above-mentioned correlates on women entrepreneurs because it is among these women that the correlates can be best studied. The investigation of the three correlates is important because if indeed they relate to lowered fertility behavior, they can be included in programs that have direct implications for fertility reduction among women in general.

Fertility Behavior and Women's Need to Be Freed from Tasks in the Home

Many articles in recent years have indicated a compatibility between the desire to curtail population growth and an increase in the occupational sphere of the woman's life. Research in this field in highly developed countries shows that there is an inverse relation between women's labor force participation and fertility (Freedman, Baumert, and Bolte 1958; Gendell 1963).

Studies in developing countries also show that there is a negative correlation between female employment status and fertility. Heer and Turner (1965: 279-92), after analyzing census data for 19 countries in Latin America concluded that the "single variable

showing the highest relation to child-woman ratio is the proportion of females in the labor force." In representative samples of about 2,000 women aged 20 to 50 years in each of the cities of Rio de Janeiro, Panama, and San Jose, Miro and Rath (1965) found that working women averaged about 0.5 less children than non-working women. An identical report is given by Tabah and Samuel (1962) for Santiago, Chile.

Using data from the 1958 Statistical Survey of Households, Concepcion (1963: 57) found that the fertility of urban working wives was lower than non-working wives. Within the City of Manila, working women of the same ages tended to have one child less, on the average, than those not at work. In other urban areas, the difference was 0.51 in favor of those in the labor force. The crude fertility ratios of women in their childbearing ages, i.e., 15 to 44 years, who constituted part of the working population were, in all cases, lower than the ratios for the women economically inactive.

Pullum (1971: 20–23) used "class of worker" data to look into the marital fertility of ever married women interviewed during the 1968 National Demographic Survey. Retrospective data showed that the "not employed" women consistently showed the highest fertility, particularly in contrast to the category "employed with pay" which included women working for government, for business, or who were self-employed. Women who were "employed without pay" or those who worked on a family farm without regular monetary payment had intermediate rates.

Some studies, however, show no relationship between women's labor force participation and fertility. For instance, Stycos and Weller (1967) reported that work roles did not have any relation to the fertility of Turkish women; Rothschild (1969) found the absence of the relation among Athenian women and Concepcion (1963) obtained a similar pattern with the rural samples in her study.

To explain the presence as well as absence of a relationship between women's labor force participation and fertility, a theory of increasing role incompatibility has been posited. It asserts that a negative relation between labor force participation and fertility will be obtained only where the roles of mother and employed woman are incompatible (Goode 1960).

The question raised by this study had to do with the nature of the role incompatibility between "mother" and "employed woman." It was hypothesized that incompatibility *exists* to the extent that the working mother *feels* a need to be freed from child rearing and close home management supervision tasks and this incompatibility manifests itself in lower fertility behavior. It was also hypothesized that when the woman does not feel a need to be freed from child rearing and close home management supervision tasks, there is no incompatibility between the mother and work roles and the relation between fertility and employment is nil.

To test the above hypotheses, the women entrepreneurs were asked to respond to five-point Likert type scales assessing the extent to which they felt the need to be freed from child rearing and close home management supervision tasks at two points in their life, namely, when they first started getting busy with occupational activities and during their present manufacturing entrepreneurship. In addition, they were also asked about the extent to which they were busy during the above-mentioned periods by means of five-point Likert type scales. Number of pregnancies and average childspacing were used as measures of fertility behavior. Zero-order correlations (using Pearson's Product Moment correlation coefficients) were run between the women's need to be freed, extent of busyness, and number of pregnancies during the period when they first started getting busy with occupational activities. The same statistical treatment was applied to women's need to be freed, extent of busyness, and number of pregnancies during entrepreneurship. Partial correlations in which age was controlled were run between the woman's need to be freed and number of pregnancies when they first became busy with occupational activities and during entrepreneurship. Partial correlations controlling for age were also

run between extent of busyness and number of pregnancies during the two above-mentioned periods of the women's occupational careers. Need to be freed and extent of busyness were then correlated with average childspacing when the women first became busy with occupational activities and during entrepreneurship.

The women's mean score on extent of busyness when they first became busy with occupational activities is 4.12; during entrepreneurship it is 4.36 (Table 3). Mean scores on need to be freed are 3.63 when the women first became busy with occupational activities and 3.83 during entrepreneurship. These scores tell us that the women had been very busy for the most part of their occupational careers and that they had felt much need to be freed from the tasks of child rearing and close home management supervision. Scores on extent of busyness and need to be freed were slightly higher during entrepreneurship.

The woman had more pregnancies and shorter childspacing periods when they first became busy with occupational activities than during entrepreneurship (Table 3). Mean number of pregnancies is 2.73 and average childspacing is 2.49 years when the woman first became busy with occupational activities. Mean number of pregnancies is 1.15 and average childspacing is 3.69 years during entrepreneurship.

TABLE 3
Mean Scores on Need to Be Freed, Extent of Busyness, Number of Pregnancies, and Average Childspacing at Two Time Periods of the Woman's Occupational Career

Variable at Two Time Periods	Mean Scores
When the woman first became busy with occupational activities	
Extent of busyness	4.12
Need to be freed	3.63
No. of pregnancies	2.73
Average childspacing	2.46
During entrepreneurship	
Extent of busyness	4.36
Need to be freed	3.82
No. of pregnancies	1.15
Average childspacing	3.69

Table 4 presents the zero-order correlations between need to be freed, extent of busyness, and number of pregnancies during the period when the woman first started getting busy with occupational activities. Need to be freed is positively correlated with extent of busyness ($r = .46$, $p < .001$). The correlation coefficients between need to be freed and number of pregnancies and between extent of busyness and number of pregnancies during this period are both non-significant. During entrepreneurship, need to be freed shows a very high positive correlation with extent of busyness ($r = .91$, $p < .001$). But what is most interesting is that during entrepreneurship, both need to be freed and extent of busyness are negatively correlated with number of pregnancies ($r = -.37$ and $r = -.41$ respectively). Both correlation coefficients are significant beyond the .001 level.

The data clearly point out that during entrepreneurship, the busier the woman is with her business, the greater is the need to be freed from child rearing and close home

TABLE 4
Correlation Between Women's Need to Be Freed, Extent of Busyness, and Fertility Behavior at Two Time Periods of the Woman's Occupational Career

Variable at Two Time Periods	Zero-order Correlation			No. of Pregnancies With Age Controlled
	Need to Be Freed	No. of Pregnancies	Average Childspacing	
When the woman first became busy with occupational activities				
Extent of busyness	.46†	−.03	−.03	−.09
Need to be freed		.09	−.08	.07
During entrepreneurship				
Extent of busyness	.91†	−.41†	.26*	−.43†
Need to be freed		−.37†	.34**	−.38†

* $p < .05$
** $p < .01$
† $p < .001$

management supervision tasks, and the lower is her pregnancy rate. A question arises. Why is this pattern not manifested during the period when the woman first became busy with occupational activities? If need to be freed is truly associated with pregnancy rate, then the correlation between the two should be negative and significant not only during entrepreneurship but also prior to it as well. One variable that could confound the relationship is age. That is, the younger a woman is, the greater is her tendency to bear more children. Since many of the women first became busy with occupational activities at a much younger age than when they started entrepreneurship, the absence of a relation between need to be freed and number of pregnancies prior to entrepreneurship and the presence of a negative relation during entrepreneurship may be a function of the age variable. To be able to rule out this alternative explanation, partial correlations in which age was controlled for were run between the women's need to be freed scores and number of pregnancies for each of the two time periods. Partial correlations controlling for age were also run between extent of busyness and number of pregnancies when the woman first became busy with occupational activities and during entrepreneurship.

Table 4 presents the results of the partial correlations. Even with the effects of age partialled out, the relationships do not change. Need to be freed and extent of busyness are still uncorrelated with number of pregnancies during the period when the woman first became busy with occupational activities ($r = .07$, $p < .25$ and $r = -.09$, $p < .19$ respectively). On the other hand, not only is the negative relation between need to be freed and number of pregnancies during entrepreneurship maintained, but they even increase slightly in magnitude ($r = -.38$, $p < .001$ and $r = -.43$, $p < .001$ respectively).

Need to be freed and extent of busyness were correlated with average childspacing when the woman first became busy with occupational activities and during entrepreneurship (Table 4). Results parallel the correlations obtained with number of pregnancies. Average childspacing during the time the respondent was busy with pre-entrepreneurial occupational activities showed no relationship with need to be freed or extent of busyness during that period ($r = -.08$, $p < .24$ and $r = -.08$, $p < .24$ respectively). On the other hand, during entrepreneurship, average childspacing is

significantly related to both need to be freed and extent of busyness ($r = .34$, $p < .01$ and $r = 26$, $p < .05$ respectively). Thus, during entrepreneurship, the more busy the woman is with her business, the greater she feels the need to be freed from child rearing and close home management supervision tasks and the wider is the interval between her pregnancies.

The pattern of results requires explanation. Clearly, there is something that qualifies the relationship between need to be freed and fertility behavior. This variable is to be found in the difference between entrepreneurship and the previous occupational activities of the woman. What could it be? This researcher posits that the difference lies in the *extent of commitment* that the woman has to her occupational role and occupational activities. The woman entrepreneur is unlike many other women participants of the labor force. Because she is responsible for putting together and keeping in existence a business concern, she feels a very strong commitment to it. The busier she is with the enterprise, not only does she feel the need to be freed from home and child rearing chores that are concomitant with her married role but she is also willing, either consciously or unconsciously, to do something about it — lowering fertility behavior.

The women were queried about whether or not they ever practiced family planning. Fifty-five percent said no; the rest practiced it at some time during their married life. Of the latter group, 12 started practicing before they ever became busy with occupational activities, 36 were practicing when they started becoming busy, and 33 during entrepreneurship (Table 5). The most common method used was rhythm (Table 6). No more than 19 women ever used the pill.

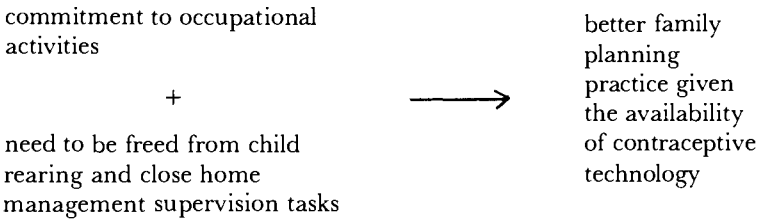
TABLE 5
Family Planning Practice of Entrepreneurs at Three Time Periods

	Practice of Family Planning			
Time Period	Yes	No	Never Practiced	Others
Before becoming busy with occupational activities	12	33	55	
When woman started becoming busy with occupational activities but before entrepreneurship	36	9	55	
During entrepreneurship	33	3	55	9

TABLE 6
Family Planning Methods the Women Have Used

Family Planning Method Used	Frequency
None	55
Rhythm	25
Pills	19
Condom	3
IUD	2
Jellies, cream	2
Withdrawal	9
Diaphragm	1

To determine whether or not the practice of family planning mediates the observed lowering of fertility behavior as need to be freed and extent of busyness increases during entrepreneurship, point biserial correlations were run between need to be freed and family planning practice and between extent of busyness and family planning practice during entrepreneurship. Results indicate a significant positive relation between extent of busyness and family planning practice ($r_{pbi} = .24$, $p < .05$) and a non-significant positive relation between need to be freed and family planning practice ($r_{pbi} = .14$, $p < .16$). The researcher hypothesizes that the failure of the latter correlation to reach significance could be because the practice of family planning *per se* is not the important variable that relates to lowered fertility behavior but it is the *quality* of family planning practice that matters. That is, it is quite plausible that when the woman is *committed* to her occupational role, the busier she is in it and the higher her need to be freed from child rearing and close home management supervision tasks, the better or more effective is her practice of family planning and hence, the lower is her fertility behavior. Unfortunately we have no data on quality of family planning practice. It is, therefore, suggested that future studies along these lines be conducted, especially one aimed at testing the following model derived from the findings of this study:



Fertility Behavior and the Economic Security Value of Children

One of the most frequently studied values of children is their economic utility. It has been asserted that the motivation of parents to have children depends to a considerable extent upon the economic value that they place on the child. Mueller (1970) in Taiwan and Bulatao (1975) in the Philippines have found that the most often mentioned advantage of children has to do with the economic benefits and economic security that they bring. The most important of these economic benefits in Bulatao's study were: assistance in old age, help in housework or family chores, and contribution to the family finances. Bulatao also found that financial costs ranked only second as a general disadvantage of having children, after emotional costs which ranked first. The Bulatao study did not find evidence though to show that the values and disvalues attached to children affected family planning nor was evidence produced to show that they actually affected childbearing.

As the economic well-being of the family increases, the child's ability to contribute financially to the household is no longer felt as a necessity. Moreover, the cost of each child increases as do the opportunities for the mother's employment, which become more difficult to pursue with additional children (Dublin and Lotka 1946; Blood 1962; Pohlman 1969).

This study sought to assess the effects of economic well-being on the economic security value of children to parents and its relation to fertility behavior. Does increased satisfaction of economic needs result in a lessening of the economic security value of children in parents? Is this related to fertility behavior?

The entrepreneurs were presented with a four-point Likert type scale asking about the extent to which they expected financial support from their children during old age.

Response alternatives ranged from 1 (very little) to 4 (very much). Mean expectation of financial support was 1.93 indicating that the entrepreneurs expected little economic help from their children. Thus, to this group of well-off women, children did not represent important sources of economic security in old age. For the overwhelming majority (92 entrepreneurs) their savings or income would serve that purpose (Table 7).

TABLE 7
Perceived Sources of Financial Support of Enterpreneurs in Their Old Age

Source of Financial Support	Frequency
Savings or income	92
Assistance from children	20
Pension	16
Insurance	2

Zero-order correlations were computed between economic security value scores and the following indices of fertility behavior: number of pregnancies and average childspacing before and during entrepreneurship. All correlations obtained were non-significant (Table 8). Fertility behavior was divided into two time periods to minimize the difficulty in relating currently held values with past behavior. Fertility behavior before and during entrepreneurship were each correlated with the economic security value of children. It was conjectured that if the economic security value and fertility behavior are indeed related, such relationship should be manifested more during entrepreneurship at which time the presently held value is more salient. The absence of relationships during entrepreneurship points to either one of two things: the economic security value of children to parents is not associated with fertility behavior *per se* in the present sample or the economic security value responses of the entrepreneurs while not indicative of past fertility behavior because it is a currently held attitudinal position, would be more reflective of present and future fertility behavior.

TABLE 8
Zero-order Correlations Between Perception of Children as Sources of Economic Security and Fertility Behavior at Two Time Periods of the Woman's Occupational Career

Variable at Two Time Periods	Perception of Children as Sources of Economic Security
When the woman first became busy with occupational activities	
No. of pregnancies	.05
Average childspacing	.19
During entrepreneurship	
No. of pregnancies	.08
Average childspacing	.16

Fertility Behavior and Conjugal Role Relationship

The relationship between the nature of husband-wife role relationships and fertility has been examined in various studies. Rainwater (1965) has suggested two types of conjugal role relationships. Egalitarian conjugal role relationships are those in which the predominant pattern of marital life involves shared or interchangeable activities. Specifically, these couples plan events together, share task performance to a great extent, and share leisure time interaction. Segregated conjugal role relationships refer to those that emphasize formal division of labor within the family.

It has been argued that the more egalitarian the conjugal role relationship, the fewer the number of children the couple will have. The study of Martinez-Esquillo (1975) on conjugal role interaction and fertility behavior has shown that the wife's participation in her husband's occupational activities has a negative relation to fertility behavior. In other words, the greater the wife's participation in the husband's occupational activities, the less children she bears. The findings of the study by Liu and Pato (1970) on Cebuano couples also suggests that if couples make decisions jointly, the family size tends to be smaller. Conversely, the greater the role autonomy, the greater the fertility ratio (Liu and Pato 1970: 89). Studies in developed countries such as Mexico (DeHoyos 1966) indicate that when social class is controlled for, there is a relationship between degree of segregation of conjugal role relationship and marital communication. Effective communication was found to be directly related to lowered fertility. This study further tested the hypothesis on the extent to which egalitarian role relationships at home and in the enterprise affects fertility behavior.

The entrepreneurs were presented with seven spheres of decision-making in the home. These were spheres pertaining to:

1. household chores,
2. care of children,
3. discipline of children,
4. family investments or business,
5. budgeting, saving, and spending of monetary resources,
6. social activities, and
7. leisure.

The entrepreneurs were asked about the nature of their conjugal decision-making patterns in each of these spheres. The number of times husband and wife shared in decision-making in the spheres was then correlated with fertility behavior. The fertility behavior indices used were number of pregnancies prior to and during entrepreneurship and average childspacing before and during entrepreneurship. The results are presented in Table 9.

Zero-order correlations between egalitarianism of conjugal decision-making patterns in the home and fertility behavior indicate that the more often the husband and wife shared in decision-making at home, the less the number of pregnancies the woman had (Table 9). This pattern held true both before entrepreneurship ($r = -.29$, $p < .03$) and during entrepreneurship ($r = -.43$, $p < .002$). Egalitarianism in decision-making in the home was not related to average childspacing either before or during entrepreneurship ($r = .20$, $p < .10$ and $r = .14$, $p < .18$ respectively). The picture that emerges from the above is one where the wife had fewer pregnancies the more she and her husband shared in decision-making in the home. This, however, is not concomitant with longer time intervals between children. In other words, for some women, fewer pregnancies occurred with longer childspacing periods; for others, this pattern did not hold, i.e., for some, the pregnancies were staggered whereas for others, they came one after the other and then stopped.

Point biserial correlation, coefficients were estimated between the extent of egalitarianism of decision-making in the home and family planning practice to find out if

TABLE 9
Zero-order Correlations Between Egalitarianism of Conjugal Decision-making Patterns in the Home and in the Firm and Fertility Behavior at Two Time Periods of the Woman's Occupational Career

Variable at Two Time Periods	Egalitarianism of Conjugal Decision-making Patterns	
	In the Home	In the Firm
When the woman first became busy with occupational activities		
No. of pregnancies	−.29*	−.04
Average childspacing	.20	.11
During entrepreneurship		
No. of pregnancies	−.43**	−.05
Average childspacing	.14	.06

* $p < .03$
** $p < .002$

the practice of family planning mediates the observed lowering of pregnancy rates as egalitarianism increases. Results show the absence of any relation ($r_{pbi} = .09$, $p < .42$). Again it is hypothesized that the absence of a relationship could be because it is the quality of family planning practice and not the practice *per se* that is associated with lowered fertility behavior.

If egalitarianism at home is negatively related to pregnancy rate, is egalitarianism in the enterprise also negatively related to pregnancy rate? Zero-order correlations between conjugal decision-making patterns in the firm and number of pregnancies before and during entrepreneurship show the absence of any relation ($r = -.04$, $p < .43$ and $r = -.05$, $p < .41$ respectively). In the same manner, zero-order correlations between conjugal decision-making patterns in the firm and average childspacing before and during entrepreneurship are also nil ($r = .11$, $p < .28$ and $r = .06$, $p < .38$ respectively). Conjugal decision-making patterns in the home were correlated with conjugal decision-making patterns in the firm. Results show the absence of any relationship ($r = .08$, $p < .27$).

The pattern of findings thus point out that regardless of how husband and wife shared authority in their firms, it is the sharing of authority and communication in the home that affects the women's fertility behavior. The greater the sharing, the less pregnancies the woman has.

SUGGESTIONS FOR RESEARCH

Results of the study suggest that the woman's commitment to her occupational role affects fertility behavior. A further examination of this phenomenon is necessary, especially among women engaged in various types of occupational pursuits in general. The relationship of the *quality* of family planning practice to the need to be freed from child rearing and close home management supervision tasks and to egalitarianism of conjugal role relationships in the home should be investigated further.

The extent to which children represent sources of economic security to parents in old age was found not to be correlated with fertility behavior. It was asserted that the absence of this relationship could be due to the difficulty of associating presently held values with

past behavior. To be able to determine if indeed the economic security value or other values children represent to parents affect fertility behavior, a time-series study should be conducted that will look into how presently held values affect present as well as future fertility behavior.

MATRILINEAL SOCIETY AND FAMILY PLANNING: A MINANGKABAU CASE STUDY

Maswida Tanius

Like most developing countries, Indonesia has not been able to escape the effects of the "population explosion" presently overwhelming the world. The most recent census in 1971 recorded the population of Indonesia as 119.2 million. With this figure, Indonesia takes fifth place among the most heavily populated countries in the world after China, India, Russia, and the USA. Along with a large population, Indonesia's present demographic situation may be described as having the following characteristics: rapid population growth, high birth rate, declining death rate, inclination towards a bigger number of children, heavy stream of urbanization, and uneven geographic distribution of the population.

From the four censuses carried out in Indonesia (1920, 1930, 1961, and 1971), it can be seen that in the 1920s the population growth rate was only about 1.5 percent annually, while in the 1960s it increased to about 2.1 percent. According to demographic experts, the present population growth rate at its lowest is 2.3 percent and may even be 2.5 percent or 2.6 percent (Iskandar 1974: 2). With this kind of situation, Indonesia may be categorized as a "country with continuing high fertility." It is estimated that the population will double in less than 30 years.

In order to overcome the problem of rapid population growth the government of Indonesia is attempting to reduce the fertility rate by implementing the National Family Planning Program (NFPP) which is operating simultaneously with the Five-Year Development Program (Pelita). During the first phase (1969–1973), the NFPP was stressed only in Java and Bali, since these areas comprise only 6.7 percent of the total area of Indonesia but is inhabited by approximately 63.8 percent of the country's entire population. In the second phase, the NFPP was extended to cover several provinces outside Java and Bali, because, according to the 1971 census, the population growth rates in these areas were higher than those in Java and Bali.

The implementation of the NFPP covered all walks of life on a voluntary basis. As such, family planning efforts were concentrated not only on clinical methods but also on non-clinical methods as it was realized that the eventual decision to practice family planning would reflect a change in attitude and life style of the people.

In the province of West Sumatra, the NFPP commenced in 1974. The difference between this province and the others in Indonesia is that it is inhabited by the Minangkabaus, an ethnic group which follows the matrilineal family system, whereby the line of descendants comes from the mother.

According to the 1971 census, the population of West Sumatra was 2.79 million. Of this, approximately 2.68 million (about 96 percent) were Minangkabaus. Apart from this, it was estimated that the Minangkabau people living outside the province of West Sumatra numbered approximately 1.9 million (Naim 1972: 3). From these figures, it appears that the Minangkabaus comprise the largest ethnic group in the world following a matrilineal family system (de Jong n.d.).

THE PLAN OF STUDY

This present study, therefore, investigates the socio-cultural factors which affect the practice of family planning in the Minangkabau matrilineal society in West Sumatra. It is important to stress here that the principal target of this research is not the socio-cultural factors which influence *fertility*, but those which influence the *desire* and the *efforts* to control fertility voluntarily.*

Scope of the Research

The province of West Sumatra consists of 14 second-level districts (eight regencies, six towns) covering 80 sub-districts, 543 states/villages, and 3,476 sub-villages. As has been said, the largest group of inhabitants in West Sumatra are the Minangkabaus. Currently the word "Minangkabau" is often identified with "West Sumatra." However, the history of the Minangkabaus shows that the geographical area which this group occupied is not the same as the present West Sumatra. The term "Minangkabau" holds a cultural as well as a geographical meaning.

Previously, the Minangkabau culture center (Matriarchat Center) covered an area called Luhak nan Tigo, i.e., comprising Luhak Agam, Luhak 50, and Luhak Tanah Datar. These areas are now known as Agam Regency, 50 Kota Regency, and Tanah Datar Regency. They are situated in the middle of West Sumatra Province. The other areas outside this Matriarchat Center are known as the Rantau Area (Mansoer et al. 1970: 1-4).

In the Matriarchat Center districts, the matrilineal system is commonly practiced. But, in the Rantau Area this is not the case as there have been influences from other cultures which are non-matrilineal, such as the Aceh, Javanese, and Malay cultures. The Rantau Area is located on the boundaries of areas which do not follow the matrilineal system. Because of this, the Rantau Area appears to be a transition area between the Minangkabau areas and those of other non-matrilineal groups. Among the Minangkabaus the matrilineal system is practiced differently in the rural and the urban areas. This difference also exists between the Rantau Area and the Matriarchat Center itself. Generally, the matrilineal system is more strictly followed in rural areas than in the urban ones. Because of these conditions, the Minangkabau matrilineal society is referred to as a society in transition by Prof P.E. de Josselin de Jong (n.d.).

This research covers several aspects of family planning, such as number of children considered ideal/desirable, attitude towards family planning, use of modern contraceptives, and others. These aspects are then related to the socio-cultural aspects of the Minangkabau society. The preliminary investigations focus on the *intermediate variables* in society which are those variables connected with the responsibility towards bringing up of children, the value of children, and the influence of customs on the life of a married couple. The socio-cultural factors which influence these three variables receive the most attention in this research.

Sampling

Sampling for this study was done by means of a three-stage stratified random sampling for the Matriarchat Center and the Rantau Area with "rural" and "urban" classifications. The primary sampling unit (PSU) was the village and the secondary sampling unit (SSU) was the sub-village. From each SSU, families were chosen by systematic random sampling to become the elementary sampling units (ESU) for this research. These ESUs had to fulfill the following requirements. They had to be native

*If the socio-cultural factors which influence fertility can be classified into 11 intermediate variables, as assumed by Kingsely Davis and Judith Blake (n.d.), then it is clear that the factors which influence the desire and efforts to control fertility have a narrower and different scope.

Minangkabau men and women who were currently married. The women had to be between 15 and 49 years old. This age requirement was used since it is between these age limits that a woman is most likely to have children. In each family sample, the husband and wife were interviewed simultaneously.

It was found that out of the 2.68 million Minangkabaus living in West Sumatra, nearly 36 percent live in the Matriarchat Center, with the majority living in the rural areas. The rest (64 percent) live in the Rantau Area. In the Matriarchat Center, all the villages in the Agam Regency were taken as the bases for obtaining rural PSU, and the villages in the township of Payakumbuh for the urban PSU. In the Rantau Area, the villages in South Pesisir Regency and the town of Padang were taken as the bases for obtaining rural and urban PSUs, respectively. These selections were made completely at random. The number of families for the sub-village sample was taken from the 1971 population census.

In the 1971 population census, the Minangkabau families were not separated from the non-Minangkabau families. Thus, it was difficult to obtain the samples for this research. However, the researchers tried their best to obtain only Minangkabau families as samples. Table 1 shows the sampling design used in this research.

From the 129 villages in the research area, 32 were taken as PSUs by random sampling with the sample fraction of one fourth. The 32 sample villages included 205 sub-villages. Random sampling was again used with the sample fraction of one twelfth to obtain the SSU, from which 17 sub-villages were obtained.

The total number of families chosen as ESUs were 336 (about 0.06 percent of the total number of Minangkabau families), 126 families in the Matriarchat Center and 210 in the Rantau Area. The family samples were taken by systematic random sampling with the interval set at ten. From these 336 family samples, 672 respondents were interviewed (336 husbands and 336 wives).

Out of the data collected from the 336 ESUs, 12 had to be disqualified because they did not fulfill the requirements for processing and analysis. Four of these disqualified data were from the Matriarchat Center (rural) and eight from the Rantau Area (seven urban and one rural areas).

Data Collection

Collection of field data was done by the teaching staff of the Faculty of Law and Social Sciences, Andalas University, Padang, the majority of whom are from the Research Bureau of the said Faculty. Two enumerators worked together in several previously chosen sub-villages.

Data were collected through personal interviews with the respondents in the sample families. The interviews were conducted according to instructions printed in a pamphlet given to all interviewers. This was done to ensure uniformity in the interviews, as well as to avoid any bias. The possibility of bias was also reduced by wording each question in a form easily understood by the respondents. For example, in order to find out whether or not the respondent practiced the system of matrilocal marriage, he/she was asked whether or not after marriage the couple lived in the wife's house with the other members of her family.

The interview pamphlet had two sections. The first section (different for men and women) covered the cultural background of the respondent. The second part (applicable to all respondents) contained questions on family planning. All questions were in the Indonesian language.

THEORETICAL FRAMEWORK

Among the many different forms of community life all over the world, only 15 percent have a matrilineal type of life. In this minority group the Minangkabaus have a special

TABLE 1
Sampling Design

Strata (1)	No. of States (2)	PSUs of Villages (3)	No. of Sub-villages in PSU (4)	SSUs of Sub-villages (5)	No. of Households in the SSU (6)	Systematic Sampling Interval of Households (7)	No. of ESUs (8)	No. of ESUs Replying (9)
Matriarchat Center*	80	20	90	8	1,257		126	122
Urban	7	2	12	1	104	10	11	11
Rural	73	18	78	7	1,153	10	115	111
Rantau Area**	49	12	115	9	2,102		210	202
Urban	13	3	27	2	965	10	96	89
Rural	36	9	88	7	1,137	10	114	113
TOTAL	129	32	205	17	3,359		336	324

*The townships of Payakumbuh and Agam Regency were chosen as the urban and rural areas respectively for research in the Matriarchat Center.

**The townships of Padang and Pesisir Selatan Regency were chosen as the urban and rural areas respectively for research in the Rantau Area.

place (de Jong n.d.). With a population of about 2.68 million, the Minangkabaus form the largest matrilineal ethnic group in the world. The Minangkabaus also comprise one of the ethnic groups in Indonesia to whom family planning is taught alongside of the belief in the importance of a large number of relations.

A special feature of the Minangkabau society is that "family members" do not only refer to the husband, wife, and pre-adult children, but to all the blood relatives from one mother, grandmother, or great-grandmother as well. Marriage does not change one's status in the circle of relatives, in the sense that the husband or wife still remains a member of his or her own relative circle after marriage. The strength of solidarity between the family members depends on whether the relationship between them is distant or close.

It is important to mention that in a matrilineal society, the system of marriage is matrilocal, meaning that after marriage the husband stays in the house of the wife together with her other family members. However, he is not a member of his wife's family. He is only looked upon as an "honored guest" in his wife's family. Thus, he is not expected to act freely, even where the welfare of his wife and children are concerned. In such a marriage, it is most difficult for the husband to have full integration with his wife and children. The reason for this is that the marriage bond is weaker than the family bond, a situation which often results in an unstable marriage. Couples who are unhappy with this situation often emigrate to another place where they can raise a family without the interference of their relatives. Emigration has become a custom in the Minangkabau society, not only in the case of men who are married, but particularly among young men who are about to get married. This is so because a man who has not travelled around is not yet considered an adult.

In a family circle, the person who has the right to determine all the actions of the other members in the family is the oldest son, called the *mamak*. He is looked upon as the head of the family, not the husband/father. In accordance with the different "levels" in the family, the *mamak*'s position also has different "levels." The family originating from one mother is headed by the oldest son called the *tungganai*. Families of the same grandmother are headed by a *tungganai* who is made the head according to the Minangkabaus' own custom and called the *penghulu andilo*. Families originating from one maternal source are headed by a *penghulu andilo* and given the name of *penghulu pucuk*.

In a family circle, each person's function and position differ according to his/her sex. Besides being candidates for the *mamak* position, the boys are duty bound to look after the family's properties and belongings. The girls, in turn, have a special function and position. Because the line of descendants is drawn from the mother, the future of the family circle greatly depends on her having daughters. The future of the family will be completely destroyed if there are no daughters or if the daughters die before being married and having children. Function and position in a family are closely related to the number of children desired. Because of the important function of children in the family circle, it is the responsibility of not only the husband and wife in the family to have children but also of the other close members of the family circle as well.

From the above it is clear that the problems of a matrilineal society and family planning involve the "implication of customs on the married life of a couple, principal function of children according to the respondent, and the responsibility to care for children," all of which influence the number of children desired, attitude towards family planning and practice of family planning by a couple. These three factors were chosen as variables for this study because they are assumed to influence the desire and efforts to control fertility.

Implication of customs on married life is seen in a traditional type of marriage, in which there is a great deal of interference from the family circle. In this study this factor is considered important because one of the aims of family planning is harmony throughout

the entire family, and interference by the family circle affects the stability and harmony of a marriage. The factor, principal function of children in the respondent's view, is very closely connected with the number of children desired. The factor of responsibility of caring for the children affects the ability of the husband and wife to bring up their children, which in turn affects their desire to control the number of children they have.

There are several cultural factors which influence the above three variables. The special traits of traditional marriages may be seen from the choice of the marriage partner by the parents, principally from cross-cousins. Besides this, the factor of the *mamak* acting as the head of the family increases the possibility of family interference.

In addition to the principal function of children in the opinion of husband and wife and the responsibility of caring for the children being not only that of the couple's but also of the other close members in the family circle, all the aforementioned factors are assumed to influence the desire and efforts of a husband and wife to control fertility.

FINDINGS OF THE RESEARCH

As previously mentioned, the data collected in this research were from 336 sample families, involving 672 respondents (336 husbands and 336 wives). From this total, data from 12 sample families (24 respondents) had to be discounted because of their failure to meet the requirements of processing and analysis. Thus, the final set of data used were from 324 sample families or 648 respondents (96.43 percent), namely, 244 respondents from the Matriarchat Center (222 rural and 22 urban), and 404 respondents from the Rantau Area (226 rural and 178 urban).

Age and Sex Distribution

In the rural area of the Matriarchat Center, the highest percentage of female respondents was found in the 30 to 34 and 40 to 44 age groups — 23.4 percent and 22.52 percent, respectively. The lowest percentage was found in the 15 to 19 age group — only 4.51 percent. The males were slightly older. The highest percentage was found in the 45 to 49 age group (36.04 percent), followed by the 35 to 39 age group (22.5 percent). There were no male respondents in the 15 to 19 age group.

In the urban area of the Matriarchat Center, there were no male or female respondents in the 15 to 19 age group. There were no males found in the 20 to 24 or 40 to 44 age groups as well. The highest percentage of male respondents was found in the 35 to 39 age group (45.46 percent). Nine percent of the males were aged 49 and above. For the female respondents, the percentage in each age group was about the same, i.e., 18.18 percent, except in the 40 to 44 age group where it was only 9.09 percent.

In the rural Rantau Area, the female respondents were mainly in the 20 to 24 age group (26.55 percent). Only about two percent were in the 45 to 49 age group. The males were mostly in the 25 to 29 age group (22.12 percent). It is important to note that this is one of the areas where male respondents aged between 15 to 19 were found (0.89 percent).

In the urban Rantau Area, many of the female respondents were found in the 30 to 34 age group (25.84 percent). The smallest percentage was found in the 15 to 19 age group (5.62 percent). For the males, the highest percentage was found in the 40 to 44 age group (25.84 percent). As with the urban Matriarchat Center, the urban area in Rantau also had male respondents aged 49 and above (7.87 percent).

Educational Attainment

Most of the female respondents had primary school education. This is apparent in all the districts covered by the study. Furthermore, the percentage of female respondents becomes smaller as the level of education goes up. Contrary to this study's initial assumption, it was seen that the highest level of education achieved by the females was upper secondary in the urban areas of both the Matriarchat Center and the Rantau Area.

In the rural areas there were female respondents who had received tertiary level education although the percentage was small (1.80 percent for the Matriarchat Center and 1.77 percent for the Rantau Area). However, in the Matriarchat Center rural area there were female respondents who had never been to school (4.51 percent).

The level of education of the male respondents was not very different from that of the females. More than half the male respondents in each district were educated up to primary level only. This was especially true in the Matriarchat Center urban area where more than four fifths of the respondents (81.82 percent) were educated up to primary level. In all areas the percentage of male respondents decreased as the level of education went up. It is interesting to note that in the Rantau Area, there were more male respondents with tertiary level education than female respondents. Nevertheless, in the Rantau Area there were also some male respondents who had never been to school (although the percentage was small), while this was not the case with the female respondents in this area.

Age at First Marriage

There is an assumption that the age at first marriage is higher in the districts outside Java than in Java itself, i.e., 21 versus 19 years (McNicoll and de Made Mamas 1973: 24-25). Among the provinces, Java has the lowest average age at first marriage (17 years) while Yogyakarta has a relatively higher average (approximately 22 years) (Iskandar 1970: 75, 137; Singarimbun and Manning 1974: 31-43).

Among the Minangkabaus, the respondents' age at first marriage also showed a high level. Table 2 shows the age at first marriage for males and females in the various areas covered by this research.

TABLE 2
Percentage Distribution of Respondents by Age at First Marriage, and by Area

Age at First Marriage (years)	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Women				
Below 15	6.31	—	13.27	10.11
15-17	19.82	9.09	34.51	24.72
18-20	34.23	63.64	30.09	41.57
21-23	24.32	18.18	18.59	19.10
24-26	11.71	—	1.77	4.50
26 and above	3.60	9.09	1.77	—
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)
Average	19.8	20.0	18.1	18.6
Men				
Below 15	—	—	—	—
15-17	1.80	—	1.77	3.37
18-20	10.81	9.09	32.74	16.85
21-23	27.03	27.27	26.55	31.46
24-26	26.13	27.27	19.47	23.60
26 and above	34.23	36.36	19.47	24.72
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)
Average	24.0	24.3	22.9	23.2

More than a third (34.23 percent) of the female respondents in the Matriarchat Center rural area had married for the first time between the ages of 18 and 20. About a quarter (24.32 percent) had married between the ages of 21 and 23, and 15.31 percent married at the age of 24 and above. Only about a quarter (26.13 percent) married before the age of 17. In the Matriarchat Center urban area, 63.64 percent married between the ages of 18 and 20. No one married before the age of 15.

Findings for the Rantau Area rural and urban areas were not much different. There were, however, some females who married before the age of 15 (13.27 percent in the rural area and 10.11 percent in the urban one). It is interesting to note that the average age at first marriage of women in the Matriarchat Center is slightly higher than that in the Rantau Area.

The average age at first marriage of the male respondents is about four to five years higher than that of the females. Like the female respondents, the average age at first marriage of the males is higher in the Matriarchat Center than in the Rantau Area. A more detailed breakdown may be seen in Table 2.

Choice of Marriage Partner

Only 33.80 percent of the 648 respondents in this survey reported that their husbands/wives were their own choice. The majority of the respondents (66.20 percent) said that their life partners were chosen by their family circle. Such choices were accepted by 64.04 percent of them, but there were some (2.16 percent) who had to be forced to accept these choices.

To date there are still forced marriages among the Minangkabaus, however, these do not happen too often. Table 3 shows that forced marriages occur in the rural areas of both the Matriarchat Center and Rantau Area. Such marriages in the urban area occurred in Rantau Area only. Although no forced marriages were reported for the Matriarchat Center urban area, the percentage of parents choosing marriage partners for their children here was higher than in the other areas (81.82 percent).

It appears that the Minangkabau male has more freedom than the female in the choice of a partner. More male respondents (58.45 percent) made the choice themselves while only 41.55 percent of the females did so. On the other hand, where forced marriages were concerned, more females (92.86 percent) than males (7.14 percent) were involved. Similarly, there were more females who accepted the choice of their elders (53.01 percent) as compared with the males (46.99 percent).

TABLE 3
Percentage Distribution of Respondents by Choice of Marriage Partner and by Area

Choice of Marriage Partners	Matriarchat Center		Rantau Area		All Areas
	Rural	Urban	Rural	Urban	
Own Choice	25.68	18.18	38.49	39.89	33.80
Choice of Elders/Parents					
By force	2.25	—	1.33	3.37	2.16
By acceptance	72.07	81.82	60.18	56.74	64.04
TOTAL	100.00	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)	(648)

Type of Marriage

The stipulation that in a matrilineal system it is considered ideal to have marriage between cousins does not appear to be borne out by the trends found in the present Minangkabau society. The data collected in this research indicate that in all the areas studied only a small number of the respondents had cross-cousin marriages (see Table 4).

TABLE 4
Percentage Distribution of Respondents by Type of Marriage, and by Area

Type of Marriage	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Cross-cousin, i.e., there is blood relationship between husband and wife	29.73	36.36	8.85	14.61
Not cross-cousin, i.e., no blood relationship between husband and wife	70.27	63.64	91.15	85.39
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

Residence at Marriage

Another special characteristic of a matrilineal society is the system of matrilocal marriage, where the husband lives in the house of the wife, together with the other members of her family circle after the wedding ceremony. But, the husband does not have the status of being a member of that family circle. He is merely looked upon as an honored guest or as in the case of the Minangkabaus, a *sumando*.

The findings of this research show matrilocal residence is practiced by a large number of the respondents. Out of the 324 families interviewed, 67.90 percent followed this system and only 32.10 percent chose the neolocal system of residence. In almost all the areas the majority of the husbands chose the matrilocal system. The exception was the Rantau urban area where the neolocal system was more common (65.17 percent neolocal versus 34.83 percent matrilocal) (see Table 5).

Decision-making Roles of the *Sumando* and *Mamak*

As previously mentioned, in the Minangkabau family circle the person who has the right to make decisions in all matters concerning the family is the *mamak* (oldest male child from

TABLE 5
Percentage Distribution of Respondents by Place of Residence After Marriage and by Area

Place of Residence After Marriage	Matriarchat Center		Rantau Area		All Areas
	Rural	Urban	Rural	Urban	
Matrilocal	84.69	90.91	75.22	34.83	67.90
Neolocal	15.31	9.09	24.78	65.17	32.10
TOTAL	100.00	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)	(648)

the wife's side) and not the husband. The husband merely holds the status of *sumando* or honored guest. Thus, he cannot act freely even though it may concern his wife and children. Since marriage does not alter the status of the members of a family circle, decisions concerning the wife and children continue to rest with the *mamak* and the husband may only participate in such decision-making. If the matter does not concern the wife and children, then he cannot participate at all.

The above pattern appears to be practiced in Minangkabau society even to this day. More than half of the male respondents reported that the decision-making in their families (in matters concerning their wives and children) remained the right of the *mamak* (51.23 percent), and only 48.77 percent of the husbands said that they were included by the *mamak* in such decision-making. In the Matriarchat Center, this practice is still very much observed as can be seen from the large percentage of respondents who answered that decision-making was by the *mamak* only (80.18 percent for the rural area and 72.73 percent for the urban area). However, in the Rantau Area, this does not appear to be the case. Here a large number of the husbands are included in the *mamak*'s decision-making (58.67 percent for the rural area and 75.28 percent in the urban area). Interestingly, not a single respondent reported that he had the right to make unilateral decisions concerning his wife and children (see Table 6).

TABLE 6
Percentage Distribution of Respondents by Decision-making Patterns in the Family and by Area

Decision-making Pattern in the Family	Matriarchat Center		Rantau Area		All Areas
	Rural	Urban	Rural	Urban	
Mamak only	80.18	72.73	41.59	24.72	51.23
Mamak together with husband	19.82	27.27	58.41	75.28	48.77
TOTAL	100.00	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)	(648)

Respondents' Opinion on the Principal Function of Children

The desire to control the number of births as well as efforts in that direction are connected with the husband's and wife's view of the principal function of children. The assumption of this research was that a child in a family has two functions, i.e., as a member of the family and a member of the family circle. As a member of the family a child acts as one of the sources of income as well as security for the parents' old age. As a member of the family circle, his/her function is to continue the family circle system and to strengthen it.

Table 7 shows that most couples in the areas studied were of the opinion that the principal function of a child is as a member of the family circle. This is reflected in the respondents' affirmative answers to the question: "When your children are already grown up and married, would you want to be with them until your old age?" About 37 percent of the wives in the rural Matriarchat Area replied in the negative to the question: "If your financial situation in your old age were better than at present, would you still want to live with your children and grandchildren?" The rest of the wives in this area (63.06 percent) said that they wished to live with their children whether or not their means of livelihood were sufficient in their old age. Almost all the male respondents in the rural Matriarchat Center (98.20 percent) said that they wished to live with their children and grandchildren

TABLE 7
Percentage Distribution of Respondents by Their Opinion on the Principal Function of Children and by Area

Opinion on Principal Function of Children	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Wife				
As continuation of family circle	63.06	81.82	69.03	52.81
As security for parents' old age	36.94	18.18	30.97	47.19
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)
Husband				
As continuation of family circle	98.20	90.91	97.35	92.13
As security for parents' old age	1.80	9.09	2.65	7.87
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)

in their old age, whether their means of livelihood were sufficient or not. Only 1.80 percent said they did not wish to do so. For the latter group the function of the children in the family (as security for the parents in their old age) was more important. The females with the same opinion were larger in number, i.e., 36.94 percent (Table 8).

Responsibility of Caring for Children

The matrilineal custom where caring for children is not the sole responsibility of the husband and wife but that of the other close members of the family circle as well, no longer seems imperative among the Minangkabaus. More than half the respondents in this study said they had never obtained any assistance from other family members for their children's welfare, whether it be direct assistance (spontaneous gifts from the family members) or indirect assistance (in the form of property or inheritance) (see Tables 9–11).

TABLE 8
Percentage Distribution of Respondents by Their Answers to the Following Question: "Some of the People Feel That the More Daughters There Are the Better the Chances of the Family Circle Not Becoming Extinct. Are You Also of the Same Opinion?"

Respondent's Answer	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Yes	55.86	36.36	50.44	29.21
No	44.14	63.64	49.56	70.79
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

Table 9 shows the percentage of respondents using the property of the family members to help meet the expenses for their children. It may be seen that more than half the respondents in the Matriarchat Center had never made use of the family members' property for this purpose. In the Rantau Area the percentage was even higher, particularly in the urban area where it was 92.13 percent.

TABLE 9
Percentage Distribution of Respondents Using the Income from the Family Circle's Inherited Property to Provide for Their Children's Expenses by Area

Use of Income from Family Circles' Property for Children's Expenses	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Yes	43.24	45.46	22.12	7.87
No	56.76	54.54	77.88	92.13
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)

The percentage of respondents who had never obtained any direct assistance from their family members for their children is not very different from the percentage of those who had never made use of their family members' property. Throughout the entire area covered by this research, less than half of the respondents had obtained direct funds from their family circle for their children. The frequency of such assistance ranged from often to seldom (see Table 10). It is interesting to note that in the Matriarchat Center urban area the percentage of respondents who had obtained assistance was the same as that of those who had never made use of their family members' property.

In a matrilineal family circle the descendants are drawn from the mother, hence, the strength of the family circle system depends on whether or not there are daughters in the family. In other words, the more daughters there are the more the continuance of the family circle is assured. Thus, the main function of daughters is to continue the line of descendants and strengthen the life of the family circle. The respondents' answers when queried about this aspect of their society may be seen in Table 8. Only a portion of the respondents supported the following statement: "Some of the elders feel that the more

TABLE 10
Percentage Distribution of Respondents by Frequency of Assistance from Family Circle for Children's Expenses and by Area

Frequency of Assistance from Family Circle for Children's Expenses	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Often	18.02	36.37	20.35	10.11
Seldom	13.51	9.09	15.93	13.48
Never	62.16	54.54	52.21	70.79
No children	6.13	—	11.50	5.62
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)

daughters there are the greater the chances that the family circle will not become extinct." In the urban areas (Matriarchat Center and Rantau Area) less than half the respondents agreed with this statement (36.36 percent and 29.21 percent respectively). The number of rural respondents who affirmed the above statement was slightly higher — 55.86 percent in the Matriarchat Center and 50.44 percent in the Rantau Area (see Table 8).

Table 11 shows who was responsible for taking care of the children in terms of the source of money for children's expenses. Throughout the entire district it was apparent that the sources were mostly the husband and wife. This was most pronounced in the urban areas of both the Matriarchat Center and Rantau Area. It is interesting to note that in the Matriarchat Center urban area the percentage of those who said their children's funds came from the husband and wife, assistance from the family circle, and use of the family members' property is much higher than in the other areas. In spite of this, not one of the respondents in this area said that their children's funds came from the husband and wife and assistance from the family circle only, or husband and wife and use of the family members' property only.

TABLE 11
Percentage Distribution of Respondents by Responsibility of Bringing Up Children and by Area

Responsibility of Bringing up Children	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Sole responsibility of husband & wife	37.84	54.54	42.48	66.29
Responsibility of husband & wife & assistance from family	16.22	—	27.43	20.23
Responsibility of husband & wife & income from joint family property	24.32	—	9.74	4.49
Responsibility of husband & wife & assistance from family circle & joint family property	15.31	45.46	8.85	3.37
No children	6.31	—	11.50	5.62
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

Family Planning Knowledge

About 85 percent of the respondents had heard of certain family planning (FP) methods, while only 44.44 percent knew how to use them. In the Rantau Area, the percentage of respondents who knew how to use these methods or had heard of them was higher than that in the Matriarchat Center (see Table 12). However, although there were more respondents in the Rantau Area who knew the use of certain FP methods, those who said they wished to learn more about these methods were more numerous in the Rantau Area than in the Matriarchat Center (84.96 percent and 79.78 percent in the Rantau rural and urban areas, as compared with only 56.76 percent and 59.09 percent in the Matriarchat Center rural and urban areas) (see Table 12).

TABLE 12
Percentage Distribution of Respondents Who Have Heard of FP Methods, Know of Their Use and Wish to Learn More About Them by Area

Family Planning Knowledge	Matriarchat Center		Rantau Area		All Areas (n = 648)
	Rural (n = 222)	Urban (n = 22)	Rural (n = 226)	Urban (n = 178)	
Have Heard of FP					
Yes	77.48	72.72	81.42	98.88	84.57
No	22.52	27.27	18.58	1.12	15.43
TOTAL	100.00	100.00	100.00	100.00	100.00
Know of Method of Use					
Yes	23.42	54.55	45.13	68.54	44.44
No	76.58	45.45	54.87	31.46	55.56
TOTAL	100.00	100.00	100.00	100.00	100.00
Wish to Know More					
Yes	56.76	59.09	84.96	79.78	72.99
No	43.24	40.91	15.04	20.22	27.01
TOTAL	100.00	100.00	100.00	100.00	100.00

Attitude Towards Family Planning

Tables 13 and 14 show data on the ideal number of children and preference for the children's sex. It is apparent that most of the respondents in the Matriarchat Center did not as yet have any views on the number of children desired. This may be seen from their answers to the question: "In your opinion, how many children would be best for a couple such as yourselves?" More than 50 percent of the respondents replied that this decision should be "left to luck." On the other hand, most of the couples in the Rantau Area specified their ideal number of children. Only 22 percent in the Rantau rural area gave the "left-to-luck" answer. This was far more than the four percent who gave the same answer in the Rantau urban area.

Among those respondents who specified their ideal number of children, no one wanted fewer than three children. It is also interesting that although throughout the whole area covered by the research the number of children desired varied from two to ten, most respondents wanted between four and six children. Moreover, the average number of children desired by the husband was slightly higher than that desired by the wife. The highest figure was 5.8 (desired by husbands in the Rantau urban area) while the lowest was 4.4 (desired by wives in the Rantau rural area) (see Table 13).

In the Matriarchat Center, the average number of children desired was higher in the rural than in the urban area. In the Rantau Area, it was the reverse, i.e., it was higher in the urban than in the rural area. Table 14 shows the respondents' preference for their children's sex. In the Matriarchat Center, a large number of respondents (49.55 percent in the rural area and 54.55 percent in the urban one) said that the sex of the children should be "left to luck." However, the percentage of respondents who gave this answer in the Rantau Area dropped sharply (22.12 percent in the rural area and 3.93 percent in the urban area). More than half of the respondents in the Rantau Area wished for an equal number of boys and girls.

TABLE 13
Percentage Distribution of Respondents by Ideal Number of Children and by Area

No. of Children Desired	Matriarchat Center				Rantau Area			
	Rural		Urban		Rural		Urban	
	Wife	Husband	Wife	Husband	Wife	Husband	Wife	Husband
2	—	—	—	—	1.77	2.65	2.25	2.25
3	—	—	—	—	8.85	6.20	5.62	1.12
4	17.12	15.32	9.09	—	44.25	25.66	28.09	28.09
5	10.81	9.91	27.27	27.27	8.85	10.62	13.48	12.36
6	15.32	13.51	9.09	18.18	10.62	25.66	25.84	31.46
7	3.60	2.70	—	—	2.65	1.77	6.74	5.62
8	—	3.60	—	—	1.77	4.43	4.49	5.62
9	0.90	0.90	—	—	—	—	5.62	5.62
10 and above	2.70	3.60	—	—	4.49	3.37	4.49	3.37
Left to luck	49.55	50.45	54.55	54.55	21.24	23.01	3.37	4.49
TOTAL	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
No. of respondents	(111)	(111)	(11)	(11)	(113)	(113)	(89)	(89)
Average	5.5	5.7	5	5.4	4.4	5	5.6	5.8

TABLE 14
Percentage Distribution of Respondents by Sex Preference for the Children and by Area

Preference for Sex of Children	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
More girls than boys	11.26	9.09	10.18	17.42
Equal number of girls and boys	30.63	18.18	53.54	56.18
More boys than girls	8.56	18.18	14.16	22.47
Left to luck	49.55	54.55	22.12	3.93
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

In almost all the areas (except in the Matriarchat Center rural area) there were more respondents who wished for "more boys than girls" than "more girls than boys."

In all the areas covered by the research, there were far more respondents who agreed with FP than those who did not. However, the percentage of those who did not agree rose quickly when the respondent was asked his/her opinion on his/her spouse's practice of FP (see Tables 15 and 16).

In the Matriarchat Center, more than half of the wives and their husbands agreed with FP but when asked if their spouses in particular were to practice it, the percentage of wives who agreed decreased slightly (to 45 percent). Among the husbands, the percentage of those who initially agreed with FP decreased more (to 36 percent) when asked if their wives in particular were to practice it. It is also interesting to note that in the Matriarchat Center

TABLE 15
Percentage Distribution of Respondents by Attitude Towards FP and by Area

Attitude Towards FP	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Wife				
Agrees	54.96	54.55	67.26	82.02
Does not quite agree	3.60	—	0.88	6.74
Does not agree	19.82	27.27	21.24	8.99
No answer	21.62	18.18	10.62	2.25
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)
Husband				
Agrees	54.05	45.46	86.73	78.65
Does not quite agree	4.51	9.09	0.88	7.87
Does not agree	20.72	36.36	7.08	10.11
No answer	20.72	9.09	5.31	3.37
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)

TABLE 16
Percentage Distribution of Respondents by Attitude Towards His/Her Spouse's Practice of FP and by Area

Attitude Towards Spouse's Practice of FP	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Wife				
Agrees	45.05	45.45	60.18	65.17
Does not quite agree	4.50	—	1.77	7.87
Does not agree	50.45	54.55	36.28	25.84
No answer	—	—	1.77	1.12
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)
Husband				
Agrees	36.04	36.36	72.59	59.55
Does not quite agree	7.21	18.18	7.96	11.24
Does not agree	56.75	45.46	18.58	28.09
No answer	—	—	0.89	1.12
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(111)	(11)	(113)	(89)

there were many respondents who did not reveal their attitude towards FP but all the respondents gave a reply when asked for their attitude towards their spouses' practice of FP.

The percentage of couples who agreed with FP was higher in the Rantau Area than in the Matriarchat Center. Those who did not agree with the practice were more numerous in the Matriarchat Center than in the Rantau Area. What is interesting is that in the Rantau rural area, there were more husbands than wives who agreed with FP. In the urban area, there were more wives than husbands.

Practice of Family Planning

Although a large number of respondents said they agreed with FP, not many of them had practiced birth control. In the Matriarchat Center, only 10.81 percent in the rural area and 18.18 percent in the urban area had practiced birth control. The percentage in the Rantau Area was slightly higher although it was less than one-third of the total number of respondents, i.e., only 18.58 percent in the rural area and 31.46 percent in the urban one.

It is interesting to note that in the Matriarchat Center the respondents who had used certain FP methods were still using them and had been doing so for the last six months. Although the percentage of respondents in the Rantau Area who had used these methods was slightly higher than that in the Matriarchat Center, there were fewer respondents in the Rantau Area who had continued to use these methods. In particular out of the 18.58 percent in the rural area who had used these methods only 17.70 percent were still using them. In the urban area only 29.21 percent of the 31.46 percent were still using these methods (see Table 17).

Tables 18 and 19 show the FP methods that had been and were being used by the respondents. In the Matriarchat Center almost all the methods that had been used were still being used although the percentage of respondents were and continued to be low, i.e., less than two percent for each method. In the Rantau Area the percentage of respondents who had used and were still using these methods is slightly higher than that in the

TABLE 17
Percentage Distribution of Respondents Who Had Used and Were Still Using Certain FP Methods by Area

Use of FP Methods	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Used Before				
Yes	10.81	18.18	18.58	31.46
No	89.19	81.82	81.42	68.54
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)
Currently Using				
Yes	10.81	18.18	17.70	29.21
No	89.19	81.82	82.30	70.79
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

TABLE 18
Percentage Distribution of Respondents by FP Methods Used and by Area

FP Method Used	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Pill	0.90	9.09	0.88	5.62
Spiral (IUD)	1.80	—	7.08	10.11
Condom	0.90	—	0.88	—
Injection	0.90	—	1.77	2.25
Tablet busa (Foam)	0.90	—	0.88	—
Calendar (Rhythm)	1.80	—	4.43	4.49
Coitus interruptus	0.90	—	—	1.12
Tonics	1.80	9.09	0.88	1.12
Massaging of women	0.90	—	1.77	6.74
Never practiced FP before	89.19	81.82	81.42	68.54
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

TABLE 19
Percentage Distribution of Respondents by FP Methods Currently Used and by Area

FP Method Currently Used	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Pill	0.90	9.09	0.88	4.49
Spiral (IUD)	1.80	—	6.20	8.99
Condom	0.90	—	0.88	—

TABLE 19 (Continued)
Percentage Distribution of Respondents by FP Methods Currently Used and by Area

FP Method Currently Used	Matriarchat Center		Rantau Area	
	Rural	Urban	Rural	Urban
Injection	0.90	—	1.77	2.25
Foam	0.90	—	0.88	—
Calendar (Rhythm)	1.80	—	4.43	4.49
Coitus interruptus	0.90	—	—	1.12
Tonics	1.80	9.09	0.88	1.12
Massage	0.90	—	1.77	6.74
Never used before	89.19	81.82	82.30	70.79
TOTAL	100.00	100.00	100.00	100.00
No. of respondents	(222)	(22)	(226)	(178)

Matriarchat Center. The "spiral" appears to have been the most frequently used contraceptive, followed by "massage" and the "calendar system." The pill was popular in the Rantau urban area only. Not all the respondents who had used FP methods before were still using it.

THE INFLUENCE OF CUSTOMS ON MARRIED LIFE AND FAMILY PLANNING

There are many cultural factors influencing the married life of a couple which may also influence their desire and efforts to control fertility. As previously assumed, a traditional marriage in the Minangkabau society is marked by several cultural factors. They are as follows:

1. The choice of the marriage partner is the right of the parents.
2. Preference or priority is given to cross-cousins.
3. The married couple live in the matrilocal residence.
4. The *mamak* has the right to make decisions in the family.

From the data collected in this research it was possible to find the relationship between these various cultural factors and FP.

Choice of Marriage Partner and Family Planning

As pointed out previously, a large number of respondents still followed the tradition where the elders have the right to choose one's marriage partner. Out of the 324 females and 324 males interviewed, only 91 and 128 respectively chose their own marriage partners. This factor of choice of marriage did influence their desire and efforts to control fertility, as seen in Table 20 (for female respondents) and Table 21 (for male respondents).

Among the female respondents, there was a difference in the number of children desired by those who chose their own partners and those whose partners were chosen by their elders. Although the average number of children desired by Minangkabau women is quite high (more than four), women who chose their own partners seemed to want a smaller average number of children than those whose husbands were picked by their elders. What was most interesting was the fact that those women whose marriages were forced desired the highest average number (5.4) while those who agreed to their elders' choice desired a lower average, 5.25.

A look at the women's attitude towards FP shows that most of those who chose their own partners agreed with the practice. On the other hand, most of those who did not

TABLE 20
Percentage Distribution of Female Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Choice of Marriage Partner

Characteristic of FP Efforts	Choice of Partner		
		Elders'/Parents' Choice	
	Own Choice (n = 91)	By Force (n = 13)	Not by Force (n = 220)
No. of Children Desired			
2	3.30	7.69	—
3	6.59	—	4.09
4	31.87	23.08	28.64
5	23.08	—	7.27
6	18.68	30.77	14.55
More than 6	4.39	15.38	11.81
Left to luck	12.09	23.08	33.64
TOTAL	100.00	100.00	100.00
Average	4.74	5.4	5.25
Attitude Towards FP			
1 General attitude			
Agree	85.71	69.23	58.64
Not quite agree	—	—	5.00
Do not agree	7.69	30.79	20.91
No answer	6.59	—	15.45
TOTAL	100.00	100.00	100.00
2 Attitude if own husband were to practice FP			
Agree	68.13	46.15	51.36
Not quite agree	3.30	—	5.00
Do not agree	26.37	53.85	43.18
No answer	2.20	—	—
TOTAL	100.00	100.00	100.00
Practice of FP			
1 Used before			
Modern methods	31.87	—	9.09
Traditional methods	3.30	15.38	4.09
Never used before	64.83	84.62	86.82
TOTAL	100.00	100.00	100.00
2 Currently using			
Modern methods	29.67	—	8.64
Traditional methods	3.30	15.38	4.09
Not using	67.03	84.62	87.27
TOTAL	100.00	100.00	100.00

agree with it were from the group whose marriages were arranged by their elders, especially among those whose marriages were forced.

Most of the women who chose their own partners (68.13 percent) also agreed with FP and to their own husbands' practicing it. Those who did not agree with FP were most numerous among those who had forced marriages (53.85 percent).

Although more than 85 percent of the women said they agreed with FP, those who had used modern contraceptives before comprised only 31.87 percent while those who were still using them at the time of the survey made up only 29.67 percent. However, these figures are much higher when compared with those women whose husbands were chosen by their elders. Among those women whose marriages were forced, no one had used/was currently using modern contraceptives. It should be noted that prior to the introduction of modern contraceptives by the government, the Minangkabau women already knew of traditional FP methods, such as "tonics" and "massage," although the number who had used or were using them was not large. Women who used these traditional methods were mostly found among those in forced marriages.

It was a little difficult to analyze the situation regarding males with forced marriages because out of all the males interviewed, there was only one who had such a marriage.

The men who chose their own wives wanted an average number of 5.08 children, which is much higher than the number desired by women in the same category, but still lower than the number wanted by men whose wives were chosen by their elders.

The percentage of men who agreed with FP and to their own spouses' practice of it was higher among those who chose their own wives than those who wives were chosen by their elders.

With respect to the practice of FP, 35 percent of the men who chose their own wives had used modern contraceptives, and 32 percent were still using them. The corresponding figures among those whose wives were chosen by their elders was a mere 0.05 percent (see Table 21). From the above data the following conclusions may be drawn.

1. When compared with those whose partners were chosen by their elders, more respondents who chose their own marriage partners had formed their opinion as to how many children they wanted.
2. Those who chose their own partners wanted a smaller number of children, and a bigger percentage of this group had a positive attitude towards FP. Within the group there was also a bigger percentage of those who had been/were still using certain contraceptives.
3. Women who experienced forced marriages wanted a larger number of children. Not many of them had a positive attitude towards FP, and only a few of them had used/were still using certain contraceptives, compared with those women who chose their own husbands.

It may be said, therefore, that the choice of a marriage partner, particularly where the right of choice rests with the elders, is one cultural factor which hinders FP in the Minangkabau society.

In a traditional marriage, there is also a tendency to give first preference to first cousins in the family as marriage partners. However, marriage between cross-cousins does not seem to be practiced much in the Minangkabau society nowadays. Among the 324 families (648 respondents) investigated, there were only 120 respondents who practiced this type of marriage. Probably this is because other forms of marriage are accepted even while preference is given to cross-cousin marriages.

There was a large number of respondents who still had not decided on the number of children they desired, i.e., 34.17 percent of those respondents from cross-cousin marriages and 26.33 percent from the non-cross-cousin marriages. These data are presented in Table 22.

TABLE 21
Percentage Distribution of Male Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Choice of Marriage Partner

Characteristic of FP Efforts	Choice of Partner	
	Own Choice (n = 128)	Elders'/Parents' Choice (n = 196*)
No. of Children Desired		
2	3.12	0.51
3	6.25	—
4	25.78	19.49
5	15.63	8.72
6	25.78	20.51
More than 6	10.94	11.80
Left to luck	12.50	38.97
TOTAL	100.00	100.00
Average	5.08	5.71
Attitude Towards FP		
1 General attitude		
Agree	83.59	64.10
Not quite agree	2.34	5.64
Do not agree	9.38	16.41
No answer	4.69	13.85
TOTAL	100.00	100.00
2 Attitude if own wife were to practice FP		
Agree	72.66	44.10
Not quite agree	3.90	11.80
Do not agree	22.66	43.59
No answer	0.78	0.51
TOTAL	100.00	100.00
Practice of FP		
1 Used before		
Modern methods	35.16	2.05
Traditional methods	—	—
Never used before	64.84	97.95
TOTAL	100.00	100.00
2 Currently using		
Modern methods	32.81	2.05
Traditional methods	—	—
Not using	67.19	97.95
TOTAL	100.00	100.00

*Including one person with forced marriage.

TABLE 22
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Type of Marriage

Characteristic of FP Efforts	Type of Marriage	
	Cross-cousin (n = 120)	Not Cross-cousin (n = 528)
No. of Children Desired		
2	0.83	1.52
3	4.17	3.41
4	15.83	27.84
5	12.50	11.17
6	22.50	18.94
More than 6	10.00	10.79
Left to luck	34.17	26.33
TOTAL	100.00	100.00
Average	5.38	5.21
Attitude Towards FP		
1 General attitude		
Agree	63.33	70.64
Not quite agree	5.83	3.41
Do not agree	19.17	14.77
No answer	11.67	11.17
TOTAL	100.00	100.00
2 Attitude if own husband/wife were to practice FP		
Agree	43.33	58.33
Not quite agree	8.33	6.25
Do not agree	46.67	34.85
No answer	1.67	0.57
TOTAL	100.00	100.00
Practice of FP		
1 Used before		
Modern methods	13.33	15.53
Traditional methods	3.33	4.55
Never used before	83.33	79.92
TOTAL	100.00	100.00
2 Currently using		
Modern methods	11.67	14.77
Traditional methods	3.33	4.55
Not using	85.00	80.68
TOTAL	100.00	100.00

It is important to note that among those respondents from cross-cousin marriages, 63 percent agreed with FP while 19 percent did not. Among the respondents from the non-cross-cousin marriages those who agreed comprised 70 percent and those who did not agree only 14 percent. What is interesting was the attitude of the respondent if his/her own spouse were to practice FP. Among the respondents from cross-cousin marriages, the percentage of those who did not agree was slightly higher than those who agreed (46.67 percent versus 43.33 percent). With the respondents from the non-cross-cousin marriages, those who agreed comprised 58.33 percent, while 34.85 percent did not agree.

The findings become more interesting when related with the practice of FP. Although a large number of the respondents said they agreed with FP, those who had used FP methods were small in number, and those who were still using them at the time of the survey were fewer still. Out of the 120 respondents from cross-cousin marriages, only 13 percent had used modern contraceptives, and those who were still using them at the time of the survey comprised only 11 percent.

Among those respondents who had non-cross-cousin marriages, the percentage of those who had used/were still using certain FP methods was also low (although a little higher than the cross-cousin marriages), i.e., 15 percent had used such methods and 14 percent still using them.

The small percentage of respondents who had used/were still using certain FP methods may be explained by the large number of children desired by the respondents. It is obvious that marriage type does not seem to affect the practice of FP among the respondents concerned.

Matrilocal Residence and Family Planning

In Minangkabau society, a traditional marriage is also marked by matrilocal residence. This still appears to be the practice among many respondents. Out of the 648 respondents, 440 lived in the matrilocal residence and only 208 chose the neolocal one. It is important to mention that in Minangkabau society it is not a unique or new practice for couples to live in the neolocal residence. For some time now, this has been the practice, particularly among migrant couples.

As previously stated, the marriage of a female does not cause her status, i.e., her rights and duties, to change as a member of the family circle. Whether she chooses a matrilocal or neolocal residence, her family ties remain unchanged. The only difference is if she chose a neolocal residence there would be less interference from her family in her married life.

Residence after marriages does influence the desire and efforts to control fertility with respect to the respondents concerned. This is shown in Table 23. Among the respondents who chose a matrilocal residence, more than a third (35.68 percent) had not yet decided on the number of children they desired, while among those who chose a neolocal residence the corresponding figure was only 11.06 percent. Among those who had made a decision on the number of children desired, those from a matrilocal residence desired an average of 5.33, slightly higher than the number desired by those from the neolocal group which was 5.1. When related with attitudes towards FP it was seen that most of those who agreed with the practice were from the neolocal group (76.92 percent), as compared with only 65.68 percent from the matrilocal group. Those who did not agree with FP were mostly found in the matrilocal group. What is interesting is the attitude of the respondent if his/her own wife/husband were to practice FP. In this case the percentage of respondents who agreed decreased slightly — from 65.68 percent to 51.14 percent in the matrilocal group, and from 76.92 percent to 64.90 percent in the neolocal group. On the other hand, the percentage of those who did not agree seemed to increase when asked for their opinion on their spouses' practice of FP. In the matrilocal group,

TABLE 23
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Residence

Characteristic of FP Efforts	Type of Residence	
	Matrilocal (n = 440)	Neolocal (n = 208)
No. of Children Desired		
2	0.45	3.37
3	1.36	8.17
4	23.64	29.81
5	10.00	14.42
6	19.77	19.23
More than 6	9.09	13.94
Left to luck	35.68	11.06
TOTAL	100.00	100.00
Average	5.33	5.10
Attitude Towards FP		
1 General attitude		
Agree	65.68	76.92
Not quite agree	3.86	3.85
Do not agree	18.18	10.10
No answer	12.27	9.13
TOTAL	100.00	100.00
2 Attitude if own husband/wife were to practice FP		
Agree	51.14	64.90
Not quite agree	6.59	6.73
Do not agree	41.36	27.89
No answer	0.91	0.48
TOTAL	100.00	100.00
Practice of FP		
1 Used before		
Modern methods	10.91	24.04
Traditional methods	4.09	4.81
Never used before	85.00	71.15
TOTAL	100.00	100.00
2 Currently using		
Modern methods	10.91	21.15
Traditional methods	4.09	4.81
Not using	85.00	74.04
TOTAL	100.00	100.00

the percentage of those who did not agree increased sharply from 18.18 percent to 41.36 percent. In the other group it went up from 10.10 percent to 27.89 percent.

With regard to the practice of FP the data show that those who had used/were using FP methods were very few in number even though two thirds of the respondents had said they agreed with FP. This pattern was seen in both the matrilocal and neolocal groups.

The Right to Make Decisions and Family Planning

To a large extent interference in one's married life appears to be a specific feature in a traditional type of marriage among the Minangkabaus. This feature reveals itself in the making of important decisions concerning the family. According to Minangkabau custom, the right to make such decisions is in the hands of the *mamak*, who may include the husband in the decision-making. It is not permissible for the husband to make such decisions himself (even though it concerns his own family) as his status is only an "honored guest" in his wife's family circle.

Reports from respondents revealed that this custom still exists in the Minangkabau society at present. Table 24 shows that in more than half of the cases, decisions were made by the *mamak* only. In the rest of the cases it was made by both the *mamak* and the husband. There was no case reported in which the decision was made by the husband only.

When decision-making was related to the desire and efforts by husband and wife to control fertility, results showed that decision-making did not make any difference in the number of children desired. In cases where decisions were made by the *mamak* and husband together, the couples wanted an average of 5.27 children; where the decisions were made by the *mamak* only, the couples wanted an average of 5.21 children. Only approximately 35.24 percent of the couples from the latter group had not yet made a decision on the number of children desired.

However, a difference between the two groups was noted when decision-making was related with the couples' FP attitudes and practice. The data show that there were consistently more respondents who were favorable towards FP among marriages in families where decisions were made by both the *mamak* and the husband. More specifically, in this category there were more respondents who agreed with FP in general, as well as in the spouse's practice of it. There were also more respondents who had used/were still using FP methods.

THE FUNCTION OF CHILDREN AND FAMILY PLANNING

In this research, data on the function of children is given in two categories only, i.e., children "as continuation of the family system" and "as security for the husband and wife in old age." This was done because it was felt that such categories would be sufficient to account for all the functions of children in a matrilineal system.

In the Minangkabau family system, a child has two simultaneous functions, i.e., as a member of the family circle and as a member of his/her own family unit. As a member of the family circle, a boy functions as a candidate for the position of *mamak* and as a worker on family land. On the other hand, a girl continues the family line. As a member of the family unit, a child functions as security for his/her parents in their old age. Although looking after the older generation in a family circle is the responsibility of the entire family circle, the direct responsibility lies with the children. As mentioned earlier, more than 90 percent of the males in this study considered the more important function of children as continuing the family line. Only half of the females were of this opinion. Out of the total of 648 respondents, 516 considered the continuing of the family line as the more important function of children rather than being the parents' security in old age. The latter was the opinion held by 133 of the respondents. This variation of opinion regarding the functions

TABLE 24
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Maker of Decisions Concerning Family Matters

Characteristic of FP Efforts	Decision Maker(s) in the Family	
	Mamak Only (n = 332)	*Mamak* and Husband/ *Sumando* (n = 316)
No. of Children Desired		
2	1.51	1.26
3	4.22	2.85
4	24.10	27.21
5	7.53	15.51
6	18.37	20.89
More than 6	9.04	12.34
Left to luck	35.24	19.94
TOTAL	100.00	100.00
Average	5.21	5.27
Attitude Towards FP		
1 General attitude		
Agree	56.93	82.28
Not quite agree	3.92	3.80
Do not agree	18.37	12.66
No answer	20.78	1.26
TOTAL	100.00	100.00
2 Attitude if own husband/wife were to practice FP		
Agree	43.37	68.35
Not quite agree	7.53	5.70
Do not agree	48.19	25.32
No answer	0.91	0.63
TOTAL	100.00	100.00
Practice of FP		
1 Used before		
Modern methods	9.04	21.52
Traditional methods	3.01	5.70
Never used before	87.95	72.78
TOTAL	100.00	100.00
2 Currently using		
Modern methods	8.43	20.25
Traditional methods	3.01	5.70
Not using	88.56	74.05
TOTAL	100.00	100.00

of children appeared to cause differences of opinion concerning FP (see Table 25). Respondents who considered security for parents' old age as the first function of children wanted a lower average number of children (4.96) than those respondents who considered the continuation of the family line as children's primary function (5.32).

There was not much difference between the two groups of respondents when their opinion of children's function was seen in relation to their attitudes towards FP. The percentages of respondents who agreed or disagreed with FP in the two groups were almost the same. Among those who considered security for parents' old age as children's primary function, there was a higher percentage of those who had practiced/were practicing FP (27 percent) than among those respondents who considered the continuation of the family line as the first function of children (14 percent).

RESPONSIBILITY FOR BRINGING UP CHILDREN AND FAMILY PLANNING

As mentioned in the previous section, in Minangkabau society the custom of having the entire family circle bring up children does not seem to be observed any more. This research has showed that in this matter, the tendency is for the parents to leave the matrilineal system for a parental one.

Approximately half of the respondents who had children said that the expenses for their children were borne by the parents only, while the other half said that they had some assistance from their family circles (see Table 26). Child-rearing responsibilities, operationalized in terms of sources of funding for children's expenses, were categorized in this study in the following way:

1. The children were brought up solely by the parents.
2. The children were brought up by the parents and by other persons.
   a. With assistance from other family members who have yielded some part of the family property for this purpose;
   b. With assistance from close family members;
   c. Combination of 2a and 2b above, i.e., with assistance from close family members as well as with the use of some part of the family property.

In terms of number of children desired, FP attitudes and practice, there were variations among the respondents in the different groups, i.e., 1, 2a, 2b, and 2c. Those in Group 1 desired an average of 5.1 children. The corresponding figures for Group 2 were 6.35 (2a) and 5.31 (2b), and 5.44 (2c). In other words, the group which had the use of a part of the family property for the expenses of their children, i.e., Group 2a, desired the most children.

Approximately 75 percent of those in Group 1 agreed with FP and between 24 and 25 percent in the same group had practiced/were practicing it. Group 2b followed Group 1 in this regard. The respondents in Groups 2a and 2c were very different from those in Groups 1 and 2b, particularly in terms of the practice of FP. In Groups 1 and 2b, 24 to 25 percent had used/were using FP methods. In Groups 2a and 2c less than eight percent did so. These two groups appear to have made the least effort in planning their families. This is reflected in the low percentage of those who had used certain FP methods in these groups. Although approximately 50 percent agreed with FP, those who had practiced it (whether modern or traditional methods) comprised less than ten percent (see Table 26).

There was also quite a difference among the groups in terms of attitudes towards FP. About 75 percent in Groups 1 and 2b agreed with FP while it was only about 50 percent in Groups 2a and 2c.

The above findings show the tendency of the Minangkabaus to related FP attitudes and practice, and the desired number of children to economic factors.

TABLE 25
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Perceived Principal Function of Children

Characteristic of FP Efforts	Principal Function of Children	
	Security for Parents' Old Age (n = 133)	Continuation of Family Circle (n = 515)
No. of Children Desired		
2	0.75	1.55
3	4.51	3.30
4	36.09	22.91
5	11.28	11.46
6	16.54	20.39
More than 6	8.27	11.26
Left to luck	22.56	29.13
TOTAL	100.00	100.00
Average	4.96	5.32
Attitude Towards FP		
1 General attitude		
Agree	69.17	69.32
Not quite agree	3.01	4.08
Do not agree	9.77	17.09
No answer	18.05	9.51
TOTAL	100.00	100.00
2 Attitude if own husband/wife were to practice FP		
Agree	59.40	54.56
Not quite agree	6.02	6.80
Do not agree	33.83	37.86
No answer	0.75	0.78
TOTAL	100.00	100.00
Practice of FP		
1 Used before		
Modern methods	27.82	11.85
Traditional methods	8.27	3.30
Never used before	63.91	84.85
TOTAL	100.00	100.00
2 Currently using		
Modern methods	26.32	11.07
Traditional methods	8.27	3.30
Not using	65.41	85.63
TOTAL	100.00	100.00

TABLE 26
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Responsibility of Bringing up Children

Characteristic of FP Efforts	Responsibility for the Children				
	Group 1 Sole Responsibility of Husband & Wife (n = 310)	Not Sole Responsibility of Husband & Wife			No Children (n = 50)
		Group 2a (n = 84)	Group 2b (n = 134)	Group 2c (n = 70)	
No. of Children Desired					
2	1.61	—	0.75	1.43	4.00
3	5.16	—	2.24	—	8.00
4	23.23	16.67	31.34	21.43	46.00
5	16.45	5.95	8.21	8.57	2.00
6	19.03	10.71	26.86	24.29	12.00
More than 6	8.71	21.43	12.69	8.57	2.00
Left to luck	25.81	45.24	17.91	35.71	26.00
TOTAL	100.00	100.00	100.00	100.00	100.00
Average	5.1	6.35	5.31	5.44	4.27
Attitude Towards FP					
1 General attitude					
Agree	74.84	54.76	75.37	48.57	72.00
Not quite agree	4.19	4.76	10.45	4.29	10.00
Do not agree	12.58	25.00	11.19	22.86	18.00
No answer	8.39	15.48	2.99	24.28	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00
2 Attitude if own husband/wife were to practice FP					
Agree	61.61	51.19	58.95	31.43	50.00
Not quite agree	5.77	3.57	8.96	8.57	2.00

TABLE 26 (Continued)
Percentage Distribution of Respondents by Number of Children Desired, by FP Attitudes and Practice, and by Responsibility of Bringing up Children

Characteristic of FP Efforts	Responsibility for the Children				
	Group 1 Sole Responsibility of Husband & Wife (n = 310)	Not Sole Responsibility of Husband & Wife			No Children (n = 50)
		Group 2a (n = 84)	Group 2b (n = 134)	Group 2c (n = 70)	
Do not agree	30.97	45.24	31.34	57.14	48.00
No answer	0.65	—	0.75	2.86	—
TOTAL	100.00	100.00	100.00	100.00	100.00
Practice of FP					
1 Used before					
Modern methods	19.35	4.76	22.39	5.71	—
Traditional methods	5.81	—	5.97	2.86	—
Never used before	74.84	95.24	71.64	91.43	100.00
TOTAL	100.00	100.00	100.00	100.00	100.00
2 Currently using					
Modern methods	18.06	4.76	20.90	5.71	—
Traditional methods	5.81	—	5.97	2.86	—
Not using	76.13	95.24	73.13	91.43	100.00
TOTAL	100.00	100.00	100.00	100.00	100.00

CONCLUSION

The main focus of this research was on the cultural factors in Minangkabau society which influence the *desire* as well as *efforts* of husband and wife to control fertility. Efforts to control fertility were operationalized in terms of the number of children desired, and FP attitudes and practice in this society. The research attempted to identify the factors which obstruct and encourage FP efforts among the Minangkabaus. The investigation focused on the intermediate variables in society linked with influence of customs on the married life of males and females, functions/status of children in a family, and the responsibility of bringing up children. Findings showed that there are nine cultural factors which influence the above three variables. These variables in turn influence the desire and efforts of husband and wife to control fertility. The cultural factors grouped according to the three variables are as follows:

1. The cultural factors which affect the married life of Minangkabau males and females are:
   a. choice of marriage partner,
   b. type of marriage,
   c. residence after marriage, and
   d. rights of the *mamak* and *sumando* in the family.
2. The cultural factors which influence the functions/status of children in a family are:
   a. function of the children as members of the family unit, and
   b. function of the children as members of the family circle.
3. The cultural factors which influence the responsibility of bringing up children are:
   a. responsibility of the parents only,
   b. responsibility of the parents plus close family members, and
   c. use of joint family property.

The data were collected using a three-stage stratified random sampling of 648 respondents, made up of 324 Minangkabau couples.

A large portion of the respondents were between 25 and 40 years old. Most of the females married for the first time between the ages of 18 and 23, while the males married at a slightly older age. Generally, they had a primary school education, and only a quarter of them had completed lower secondary education. The most popular sources of information were the radio and newspaper.

Approximately 84 percent of the respondents had heard of certain FP methods, while 44 percent knew how to use them. There were about 75 percent who wished to learn more about these methods. More than 60 percent said they agreed with FP, but those who had used/were using FP methods constituted no more than 20 percent. Most of the respondents had a Minangkabau traditional marriage. This may be seen from the large number of marriages arranged by the elders, the large number of couples residing in the matrilocal residence, the large number of marriages in families where the *mamak* acted as head of the family, and finally the number of cross-cousin marriages. On the whole, those couples who had a traditional marriage desired a bigger number of children. Apart from this, they were also less favorable towards the idea of FP and had not practiced it very much. In other words, those who did not have a traditional marriage had a more positive attitude towards FP.

The function of children in a family also made up one of the factors which directly affect the desire and efforts of husband and wife to control fertility. A large number of the respondents considered that the first function of children is to continue the family circle. Only a few of them looked upon children as security for the parents' old age. The respondents in this latter group, besides wanting fewer children, had also practiced/were practicing FP more than the respondents in the first group.

The opinion that the Minangkabau family system nowadays is slowly shifting from a matrilineal system to a parental system is most apparent where the raising of children is concerned. While the matrilineal system maintains that raising children is not the responsibility of the parents only but also of the entire family circle, almost half of the respondents reported that the responsibility of raising their children rested on them alone. Those who answered in this way wanted fewer children. In addition more of them agreed with FP and had practiced it, when compared with those respondents who shared the responsibility of child rearing with the family circle. Among those respondents who obtained such assistance from the family circle, some used the joint family property for additional sources of finance to bring up their children. This group desired the highest number of children (6.3). Thus, it may be presumed that use of joint property in raising children gives rise to a negative effect on family planning.

DEMOGRAPHY AND ENVIRONMENTAL ADAPTATION: A COMPARATIVE STUDY OF TWO ABORIGINAL POPULATIONS IN WEST MALAYSIA

Albert G. Gomes

This study is a description and preliminary analysis of the relationship of population structure and dynamics to the ecological adaptation mechanisms of two different aboriginal or *orang asli* groups. One of these groups is dependent on a hunting and gathering economy, while the other is dependent on an agricultural or sedentary economy. The two groups discussed in this report are located in Rual Post, a resettlement of Negritos who are still very much dependent on hunting and gathering, and Kg. Paya Lebar, a Temuan village practicing mixed agriculture.

THE PLAN OF THE STUDY

This study explored the question of how and why do different environmental adaptation mechanisms, especially resource exploitation strategies, affect the characteristics and dynamics of human populations? To answer this question information was collected primarily through surveys using structured questionnaires. Standard anthropological procedures of participant observation and non-directed in-depth interviewing provided supplementary information. A total of about two and a half months were spent in the two villages to collect information. The main survey in Kg. Paya Lebar, which covered social, cultural, and environmental as well as demographic characteristics, was carried out in April-May 1977. The period from June 1977 to March 1978 was spent on preliminary analysis of the data and supplementary fieldwork to follow up the research leads that emerged in the analysis of data from the initial fieldwork. Fieldwork of about two weeks in April 1978 was carried out in Rual Post to supplement and update information that had been collected in April 1976 (Gomes 1976). The information collected in 1978 made it possible to compare the demographic patterns and trends in Rual Post between the years 1976 and 1978.

Collection of demographic data in aboriginal communities requires certain special methods as most of the conventional methods used by demographers cannot be employed with these non-literate populations. Demographic studies on aboriginal populations are difficult to carry out for a number of reasons. It is difficult to collect correct information on the ages of individuals in non-literate populations although correct reporting of ages is of cardinal importance in demographic studies. In this study questions such as "How old are you?" or "How old was your mother when she died?" could not be answered by the respondents. It was thus necessary to construct certain measures of reliable age estimation. Some of the responses given by the respondents were inadequate due to lack of understanding of the interview questions. This does not reflect lack of intelligence but the fact that they had little or no formal education. It was very difficult to get the respondents to discuss the past. It was absolutely frustrating when they would blatantly answer *tak ingat* (don't remember) when asked for the names of dead kinsmen. The respondents' poor recall of past events has a cultural explanation. It is considered dangerous to mention the names of the dead and, lacking unilineal descent groups with inherited corporate

property, they consider it useless in any case to remember details of their dead relatives. Collecting information on past events was considerably easier, however, among the sedentary Temuans than among the nomadic Negritos. Among the Negritos there is a strict taboo against mentioning a dead relative's name as it could bring ill luck. They believe that the dead should not be talked about as it would cause the dead to rise from their graves and cast evil spells upon the conversants. Finally, the respondents showed a lack of interest in answering some of the questions because the questionnaire employed in this study was long. On the average it took about one hour to interview each respondent. This consumed a lot of the respondent's time and energy and consequently he lost interest in the interview.

A census form and another schedule on population dynamics and a demographic questionnaire were used to collect population information. All adults present in the village were interviewed using the demographic questionnaire, while only the more cooperative and informative respondents were selected for interviews using the population dynamics schedule. Respondents were approached during their leisure time. The interviews were mostly held in public. This was a conducive situation for carrying out an interview as the respondent was able to get help from his relatives and neighbors to refresh his memory. Occasionally the onlookers helped answer questions that the respondent was not able to answer.

To ensure reliability of the data collected, the information given by the respondent was cross-checked with the information given by the respondent's relatives. Information was also checked by informal conversations with individuals relating to various aspects relevant to the demographic study.

SOCIO-CULTURAL AND BIOPHYSICAL ASPECTS OF THE RUAL POST NEGRITOS AND THE PAYA LEBAR TEMUANS

This section describes the two aboriginal populations studied in terms of their identification, distribution and population size, their biophysical characteristics, language, social organization, and religion.

Identification, Distribution, and Population Size

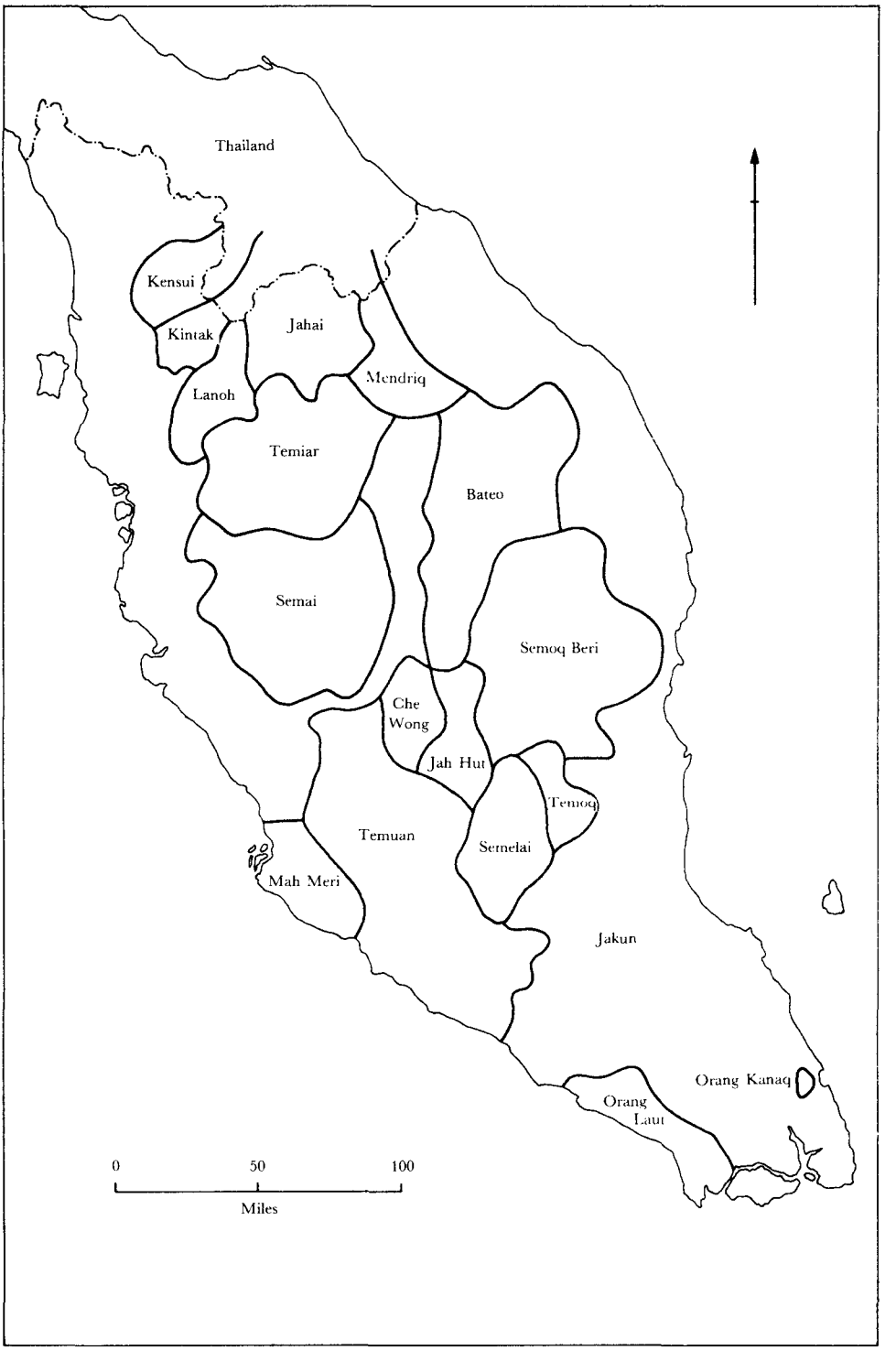
According to the Aboriginal Peoples Act of 1954 (revised in 1974), an aborigine is:

1. any person whose male parent is or was, a member of an aboriginal ethnic group, who speaks an aboriginal language and habitually follows an aboriginal way of life and aboriginal customs and beliefs (This category also includes a descendant through males of such persons.);
2. any person of any race adopted during infancy by aborigines, who has been brought up as an aborigine, habitually speaks an aboriginal language, habitually follows an aboriginal way of life and aboriginal customs and beliefs, and is a member of an aboriginal community;
3. the child of any union between an aboriginal female and a male of another race, provided that such child habitually speaks an aboriginal language, habitually follows an aboriginal way of life and aboriginal customs and beliefs, and remains a member of an aboriginal community.

The aboriginal (*orang asli*) population in West Malaysia is conventionally divided by ethnologists into three categories: Negrito (Semang), Senoi, and Proto-Malays. These are further divided into tribal groups. This categorization is based on ethnolinguistic criteria. These categories coincide with the geographical distribution of these aboriginal populations as the Negritos are mostly found in the northern parts of the peninsula, the Senoi in the central part, and the Proto-Malays mostly in the south (see Figure 1).

According to the latest population statistics prepared by the Jabatan Hal Ehwah Orang Asli (JOA), there are 56,927 *orang asli,* of which about 2,000 are Negritos, 32,600 Senoi,

FIGURE 1
Geographical Distribution of *Orang Asli* Tribal Groups in West Malaysia



and 22,300 Proto-Malays. Table 1 gives the population size of each of the tribal divisions of these groups. The map which follows shows the geographical distribution of the peninsular *orang asli.* Each group is named after the native language.

As this study involves only the Negritos and Temuans, the following sections will only focus on these two groups' socio-cultural and biophysical aspects.

Biophysical Characteristics

Written accounts (Schebesta 1928, Brandt 1961, Evans 1937) on Negritos describe West Malaysian Negritos as short, dark skinned, woolly-haired, and with broad noses and thick lips. The average height of Negrito men, according to Brandt (1961: 134), is about 150 centimeters, and about 140 centimeters in the case of women. Schebesta (1928: 277) describes them as "true dwarf tribes." However, the Negritos at Rual Post vary greatly in height, skin color, hair form, and facial features. There are tall as well as short Negritos; dark skinned (almost black) as well as brown skinned ones; and Negritos with woolly hair as well as those with straight hair. Some are even physically indistinguishable from the Proto-Malays.

TABLE 1
Distribution of the *Orang Asli* Population (1974 Census)

Tribes	No.	% of Total *Orang Asli* Population
Negritos		
Kintak	103	0.2
Kensui	101	0.2
Jahai	769	1.4
Mendriq	121	0.2
Bateq	585	1.0
Lanoh	302	0.5
TOTAL	1,981	3.5
Senoi		
Temiar	10,586	18.6
Semai	16,497	29.0
Che Wong	215	0.4
Jah Hut	2,280	4.0
Semoq Beri	1,699	3.0
Mah Meri	1,356	2.4
Semelai	2,879	5.0
TOTAL	35,507	62.4
Proto-Malays		
Temuan	8,698	15.3
Jakun	8,719	15.3
Orang Kanaq	36	0.1
Orang Seletar	374	0.7
Orang Kuala	1,612	2.8
TOTAL	19,439	34.2
TOTAL POPULATION	56,927	100.0

SOURCE: Adapted from JOA census report 1974.

The Temuans, on the other hand, have been described as having straight hair and light brown skin. The Paya Lebar Temuans generally show a very close resemblance to the neighboring Malay populations. Their average height is about 153 centimeters for the men and 142 centimeters for the women. Their average weight is about 44 kilograms for the men and 46 kilograms for the women. The Temuan's hair is normally straight and rather lustreless black or in some cases, slightly brown. Some have curly hair resembling that of the Senoi. They have very little body hair although some males have slight moustaches and beards and some have hair on their legs. Their skin color varies from a light shade of brown to dark brown.

Language

The Negritos speak an Austroasiatic language (Mon-Khmer) unlike the Temuans, who speak an Austronesian (Malayo-Polynesian) language. Many anthropologists, including J.H. Brandt, argue that Mon-Khmer is not the original native language of the Negritos. According to Brandt (1961) this language "has many words which, however, can never be traced to a Mon-Khmer or a Malayan origin and appear to be the remnants of the original language." However, Benjamin (1973), a professional anthropologist well-versed in aboriginal languages, says that Negrito dialects unquestionably belong to the Mon-Khmer linguistic family. There are six different Negrito dialects, and according to some informants in this study, there are only minor differences among these different dialects. According to Schebesta (1928), who claimed to speak Jahai fluently, there are only very minor differences among different Negrito dialects such as Jahai, Mendriq, Bateq, and Kensui. The Rual Negritos also converse well in Malay, but not as well as the Temuans. Dunn (1975: 62) says that "the Temuans are Malay speakers, their dialect is distinctive, it employs 'obsolete' Malay words and loan words from Senoi Semai." Carey (1976: 241) does not agree with this statement. According to him, "It is . . . untrue . . . that the Temuan speaks an old or 'archaic' form of Malay. Their present language is just ordinary standard Malay, spoken with the usual village twang of their Malay neighbors." In the present study not much difference between the Temuan dialect and conventional Malay was observed.

Social Organization

Negrito populations traditionally live in small bands with 15 to 50 people per band. Schebesta (1928: 279) says that "the Semang (Negrito) cannot live together except in small groups, it is impossible for the forest to feed large masses of human beings. We, therefore, find them living in family groups without any strict tribal organization." The most basic social structural unit is the nuclear family. This consists of a man, his wife, and their children. A family normally occupies an individual shelter. However, a grown up child may build his own house which is usually located quite close to his parents' house. Traditionally, the Rual families reside in lean-tos or wind screens. At present, however, they occupy Malay-type houses. As in almost all societies the nuclear family is responsible for producing children and then socializing them, inculcating in them the basic cultural and religious values of the group. The nuclear family is also the basic economic unit of Negrito society. The produce of hunting and gathering activities are shared among the members of the family and only when there is a surplus is it shared with the rest of the band.

A number of closely related families form the band. The band is, in a sense, the most "typical" social unit among the Negritos. Each Negrito band has its own territory, an area roughly defined according to the location of the durian and ipoh trees which belong to its adult male members. Normally each band has an acknowledged headman, commonly referred to as *penghulu* (Malay title for headman). He is usually chosen for his popularity, competence, and leadership qualities. A good *penghulu* must be fair as his primary duty is

to mediate in any quarrels or misunderstandings. In Rual Post, the *penghulu* are given official recognition and are salaried by the JOA. According to a JOA field officer, if the *penghulu* is considered incompetent, the JOA will pressure for a change. Normally the *penghulu* is succeeded by his eldest son, although this is certainly not always the case, for there have been frequent exceptions. The selection of a new *penghulu* involves an informal meeting of all the adult male members of the band who elect the new leader. Women of the group are normally not consulted directly, although they do express their opinions.

The members of a band normally cooperate in economic and social activities and the band's solidarity is strengthened by kinship and affined ties. The Rual Negritos normally practice virilocal post marital residence, although there are some cases of matrilocality. Patrilocal residence ensures that all males of the band remain together. Having grown up together and knowing their own territory intimately, the men are better able to engage in cooperative hunting than a group of strangers. This ensures a more efficient exploitation of the resources. Among the Rual Negritos, descent is traced bilaterally, that is, a child is considered to be equally related to both its mother and her kindred and the father and his kindred. I. Carey (1976: 44) refers to the Negrito band as a "bilateral extended family." This is quite true of the Rual Negritos in particular. There are altogether six bands in the Rual Post resettlement. The size of a band ranges from 23 to 54 people with an average of 32 people per band.

Marriage, among the Rual Negritos, is an informal arrangement. A man will normally marry at about the age of 20, while his bride may be a few years younger. Pre-marital relations are not restricted; rather, it is taken for granted and regarded as entirely natural. Divorce is normally carried out by mutual agreement and it is fairly common and easy for a couple to obtain. Negritos usually practice monogamy but this is not a rule as cases of polygamy exist.

Iskandar Carey (1976: 55) wrote, "There is very little social stratification in a small scale society such as that of the Negritos." This is certainly true of the Rual Negrito society; although there is no rigid division of labor between the men and the women.

Unlike the Negritos, the Temuans have a system of leadership which is more complex than that of a majority of the other *orang asli* groups. The Paya Lebar Temuans have seven ranks, namely, *batin, pemangku, jekara, jenàng, penghulu balai, menteri,* and *panglima.* The *batin* holds the upmost authority. He is the supreme adviser, the last court of appeal, and is quite respected for his magical powers (known as *bomoh* or *pawang* — medicine man). Most of the Temuans at Sg. Lui seek advice from the *batin* and go to him for magical cures of minor illnesses. The *batin* holds a prestigeous position and, as a token of respect, the villagers are required to give him a small share of their rice harvest or the game killed. The main criteria for choosing a *batin* is that he must be a person with a strong personality, one with wide knowledge and experience, and one who is just and fair. When a *batin* dies, he is almost always succeeded in office by his eldest son. If the son does not have the qualities of a leader, some more suitable villager may be chosen.

The *pemangku* (deputy headman) helps the *batin* in his administrative functions. It is the *pemangku* who distributes the shares from wild animals shot by any villager. The *jenang* and *jekara* also help in these administrative tasks. They normally lead and supervise cooperative work. The *jenang* accepts the responsibility of administration in the absence of the *batin* and *pemangku* and the *jekara* acts as his assistant. The management and supervision of village feasts and ceremonial occasions in general is seen to by the *penghulu balai* ("head of the hall").

There are four *panglima,* namely, *Panglima Hitam, Panglima Putih, Panglima Hulu, Panglima Hilir,* who were apparently the village military leaders in the past. They were responsible for leading the warriors in the group. Each *panglima* is allocated a certain area to defend. With the imposition of the national government's control over their territory, warfare has ceased and the *panglima's* function has become redundant.

According to Jimin Idris (1972: 6) the basic social unit among the Temuans is the nuclear family. The Temuans in Kg. Paya Lebar adhere to a bilateral kinship system. However, some anthropologists (Carey 1976; Jimin Idris 1972) describe their Temuan communities as having "characteristics of matriliny." According to them, post-marital residence is in most cases matrilocal. In Kg. Paya Lebar only five out of 17 marriages are matrilocal. Poligini is not prohibited but at Kg. Paya Lebar there were no cases of such plural unions.

Religion

Schebesta gives a very detailed account of Negrito religious beliefs. In his book, *Among the Forest Dwarfs of Malaya*, Schebesta (1928: 184) mentions that all Negritos throughout Peninsular Malaysia fear three phenomena of nature, namely, thunder, flood, and storm. In fact one of their principal deities, Karei, is supposedly a thunder-god.

Among the Rual Negritos, Karei is believed to be a Senoi who enjoys spinning a top. According to some informants, the lightning is the string that spins the top and thunder is caused when the top crashes down on earth. He is supposed to be cruel, wicked, envious, likes punishing men, and keeps snakes and certain snails as pets. One can be killed by lightning if he angers Karei. He is also believed to impose punishments when tribal taboos have been broken. The Negritos believe that a man and woman who commit incest or indulge in sexual behavior during the day will suffer a violent death shortly thereafter, either by lightning or being killed by a tiger or other wild animals, both of which are the work of Karei. They also believe that Karei will make one sick for showing disrespect to one's elders, or if one tortures or mistreats a captured animal, especially Karei's pets, e.g., snakes, leeches, and snails, or if one does not immediately kill any game that has been injured by his blow-pipe.

The Temuans at Kg. Paya Lebar are basically animists. Skeat and Blagden (1906), and Carey (1976) provide conflicting descriptions of Temuan religious beliefs and practices. Paya Lebar Temuans believe in the existence of a high god which they refer to as Tuhan. They also believe that large stones, rivers, tall trees, and mountains are the abodes of ghosts and spirits which they refer to as *hantu* and *jinn*. The Paya Lebar Temuans recognize a number of different *hantu*, each having its own abode and characteristics. They strongly believe that disease and sickness are caused by evil spirits and their activities. In order to cure these diseases the Temuans normally approach the medicineman or ritual curing specialist who would perform certain rites to neutralize the ill effects of the evil spirits and provide herbal remedies for the victim. This ritual curing specialist is also sometimes referred to as *Pa'chik Tahu Tangkul* or *pawang*. The *pawang* at Kg. Paya Lebar is reputed to be powerful. He treats not only Temuan patients but is also frequently called upon by members of other ethnic groups who pay him for his services.

ECOSYSTEMS OF THE RUAL POST NEGRITOS AND THE PAYA LEBAR TEMUANS

In the words of E.P. Odum (1971: 8), "Living organisms and their non-living (abiotic) environment are inseparably interrelated and interact upon each other. Any unit that includes all of the organisms (i.e., the "community") in a given area interacting with the physical environment so that a flow of *structure*, biotic diversity and material cycles (i.e., an exchange of materials between living and non-living parts within the system) is an ecological system or ecosystem." This system is the basic unit of description and analysis in ecology (Evans 1954). The following sections will briefly discuss the structure and functioning of the ecosystems of the Rual Negrito and Paya Lebar Temuan populations. Both ecosystems are open systems, in that there are outside forces that affect the functioning of these systems.

The Rual Ecosystem

Rual Post, a Negrito resettlement in Tanah Merah district in Kelantan, is located about nine kilometers from Jeli, a small Malay village on the banks of Sg. Jeli in northern Kelantan (see Figure 2). The Negritos were resettled there by the Kelantan branch of the Jabatan Hal Ehwal Orang Asli (JOA) in 1972. The JOA persuaded Negritos living in the nearby areas to resettle in Rual Post, where a health clinic and school were then built. The department also provided incentives and training for the Negritos to participate in agricultural projects, and the cultivation of rubber, rice, and fruit trees were encouraged. To induce the Negritos to work in the agricultural projects, the JOA gives food in the form of rice and dried fish. A medical assistant and two school teachers have been posted to Rual Post to provide medical and educational services. Besides this, doctors and nurses occasionally visit the area to tend to the sick and to provide preventive measures against the spread of diseases such as malaria, tuberculosis, dengue fever, and influenza. In order to ensure a good attendance at the school, Negrito school children are given rice, biscuits, and coffee on those days they are present. The children normally receive more than what they are able to consume and the extras are brought back home to be shared with the other members of their household. This extra food is an important source of food for the Negrito family.

The five components of the Rual Post ecosystem are as follows: Negrito population, the forest, the rivers, the *ladang,* and the Malay *kampung,* its external environment.

Negrito population

Altogether there are 192 Negritos in the Rual Post resettlement village. Although resettled, the Rual Negritos are highly dependent on forest resource exploitation for their subsistence. Being hunters and gatherers, they more or less still adhere to a nomadic way of life. However, since their resettlement, they have spent relatively less time and energy in hunting and gathering and are very dependent on the JOA "reward rations" for their participation in agricultural projects. The following sections focus on the demographic and socio-cultural aspects of the Rual Post Negritos.

Forest

Being hunters and gatherers, the forest is of great importance to the Rual Post Negritos. It is the chief source of their dietary requirements and forest products. The forest resources can be categorized into birds, animals, and plant resources. Five different types of weapons are used by Rual Post Negritos in their hunting activities. These are blow-pipes, shotguns, spears, slingshots, and knives. The blow-pipe, which is made out of specially chosen bamboo, is only effective for small game like squirrels, monkeys, bats, and birds. The dart normally has its tip coated with processed sap from the ipoh tree which makes it poisonous and deadly. Rual Post Negritos use shotguns of which there are four in the village. These were given by the JOA for big game hunting. Occasionally the Negritos use spears or spikes to hunt. Slingshots made out of wood and rubber are generally used by young boys to shoot birds or bats.

Besides hunting, the Negritos occasionally trap animals with ingeniously made traps and snares. The two most common traps are the spear trap and the pitfall. These traps and snares catch a whole range of animals from rats to wild pigs. Hunting and trapping, which are solely carried out by the men, are important activities as they supply the Negritos with much needed protein.

Along with hunting and trapping, the Rual Post Negritos also gather and collect forest resources like plants, roots, wood, and rattan for either their own subsistence or for sale. Gathering, done mostly by the women, refers to the picking of leaves, roots, mushrooms, and fruits for the Negritos' own consumption or subsistence. Forest products like rattan

FIGURE 2
Map of Kelantan Showing the Location of Area of Study, Aboriginal Resettlement Scheme of the Rual Post

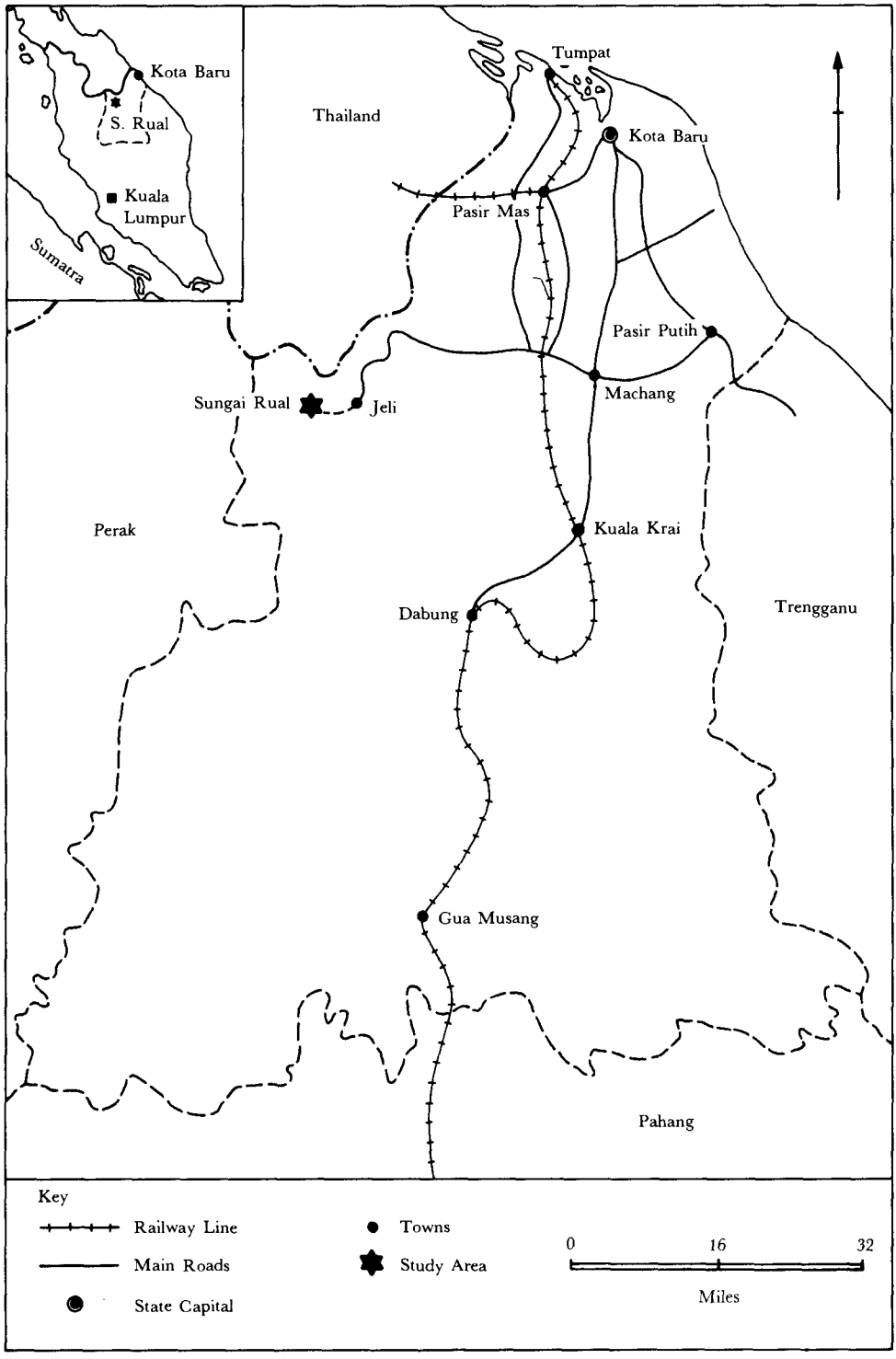
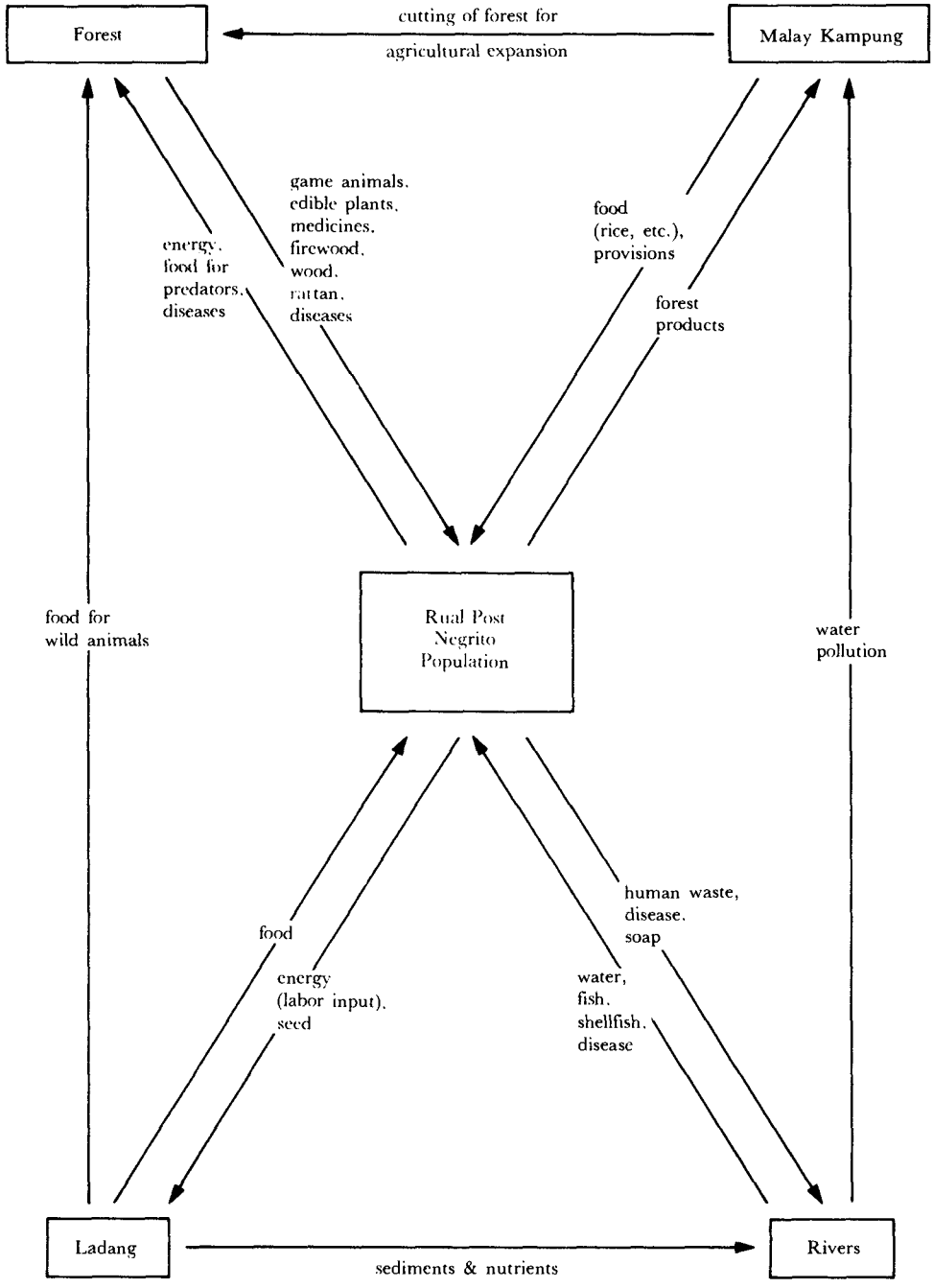


FIGURE 3
A Figurative Representation of the Ecosystem of the Rual Post Population



SOURCE: Personal communication with A.T. Rambo, JOA field officer.

and bamboo, which are sold to traders, are collected mostly by the men because the products are too heavy for the women to carry.

Apart from these forest products gathered for consumption, *mengkuang* leaves (*Pandanus*) are also collected for the weaving of baskets, mats, and bags. These woven products are made for the Negritos' own use although sometimes they are sold to outsiders.

The Negritos also depend on the forest for a supply of various resources that are needed for some domestic household artifacts. The forest is the chief source for materials like bertam leaves for roofing, wood for house frames, and bamboo for walls and floors used in house construction. Furthermore, the fire that keeps them warm, cooks their food, and drives mosquitos away is kept burning by firewood gathered from the forest.

From the description of the hunting and gathering activities and the exploitation of forest products by the Negritos, it can be said that the Rual Post Negritos are very dependent on the forest for their daily existence. The Rual Post Negritos expend considerable amounts of energy hunting, trapping, gathering, and collecting. In return for this expenditure of energy, they obtain food resources, saleable products, medicines, and so forth. They also contribute in a number of ways to the forest ecosystem. The wide roaming by the Negrito in the forest makes him susceptible to leech bites. It also makes him a prey to predators like tigers which depend on the *orang asli* as a source of food. As regards energetics, there is a flow of energy in terms of the Negritos' hunting and gathering activities and a flow of energy from the forest to the Negrito settlement in the form of the forest produce. The forest is also the domain of some vectors of diseases like malaria. These diseases are contracted from the forest and later spread to fellow Negritos.

Rivers

There are a number of rivers that flow close to the resettlement village but the more important ones, in terms of benefits to the Rual Negritos, are Sg. Rual, Sg. Long, Sg. Rinyut, and Sg. Ayam. These rivers are used as sources of drinking water, as well as for bathing, laundry, toilet purposes, and fishing. With the recent introduction of piped water, however, the Negritos have started to use the rivers less. Furthermore, due to excessive fishing in the past, there is now little fish and other edible creatures in the rivers. The Negritos claim that even in the recent past there were a lot of fishes in the rivers and fishing was an important activity. Presently, however, only small fishes are caught. Fishing is done by the use of fish traps made out of split bamboo, spear guns, hooks and lines, and hands. Fish, more than forest animals, still provides the Negritos with proteins.

Ladang

Relatively speaking, the *ladang* or cultivated environment has been of lesser importance than the forest in the lives of the Negritos. In the past the Negritos imitated their neighbors' burning of small plots of forest and cultivating crops such as topioca, maize, and other products. Presently, besides the agricultural projects launched by the JOA, the Rual Post Negritos also have small home gardens where tapioca, maize, chili plants, papaya trees, rambutan trees, and other vegetables are cultivated. The presence of such home gardens suggests the acceptance of a settled way of life by the Negritos. The produce from these home gardens are important supplements to the Negrito diet. In times of rice shortage, the Negritos turn to their home gardens for the next preferred staple food, tapioca.

At present, the Rual Post Negritos are engaged in the various agricultural projects directed by the JOA field officer. According to JOA statistics, under the present agricultural scheme which has been effective for six years, about 77 acres of forests have been cleared and cultivated with rubber trees (70 acres) and fruit trees (seven acres) such as durian trees, rambutan trees, coconut palms, and banana plants. As mentioned earlier,

the JOA provides inducements in the form of bags of rice and dried fish to the Rual Post Negritos so that they would participate in these agricultural schemes. It is the intention of the JOA to encourage the Rual Post Negritos to practice a settled agricultural lifestyle rather than the Negrito traditional nomadic hunting and gathering way of life. However, these agricultural schemes have not been very successful in completely changing the Negrito traditional way of life. The main reason for this is that the Rual Post Negritos are still more oriented to hunting and gathering activities and concomitantly to a more or less "hand-to-mouth" way of life than a settled agricultural one. They live on a day-to-day basis without much future orientation. Usually any activity a Negrito carries out in a day is done to relieve his hunger for the day. Very seldom does he save his surplus or think of his future needs. On the contrary, the agricultural crops introduced in the Rual Post Resettlement area, especially rubber trees, need long periods (at least seven years) for the "rewards" to be realized. Thus, the Rual Post Negritos have to wait seven years for their rubber trees to mature before they can begin tapping. This "long wait" runs counter to their lack of future orientation and eventually results in their loss of interest and indifference to the agricultural schemes. To counter this, JOA gives out food rations to keep the Negritos on the schemes. However, if there is a delay in the arrival of the food rations or if the food demands are not fulfilled, the Negritos stop working in the schemes and some turn to the forests for their basic requirements. This results in irregularity in the agricultural work schedules, which is detrimental to the cultivation of the crops.

Malay kampung (external environment)
The Rual Post Negritos are very dependent on the nearby Malay villages, of which Jeli and Ayer Lanas are the most important. In the past the Rual Post Negritos worked as hired hands in these Malay villages. Presently these villages are the trading centers for Rual Post Negritos. Forest products such as *petai, jering, kerdas,* rattan, medicinal herbs, and roots are sold to some of the villagers who act as middlemen traders. With the cash earned from these sales, the Negritos buy essentials like rice, cooking oil, clothing and other provisions. Occasionally, the Negrito products are bartered for these provisions from the shops in the Malay *kampung*. In carrying out these transactions, the Negritos may also transmit some infectious diseases from their settlement to the *kampung* fold and in turn carry other diseases back to their settlement, where these are spread or contained in the Negrito population.

Paya Lebar Ecosystem
The Temuan settlement of Kg. Paya Lebar is located in the Ulu Langat District in the state of Selangor, West Malaysia. The village is about 10 kilometers from Kuala Lumpur. To reach the village one has to walk about one kilometer through some rubber holdings owned by neighboring Malays. The closest town, Batu 18, is located about ten kilometers from the *kampung* (see Figure 4).

Paya Lebar (Temuan) means large swamp and Kg. Paya Lebar is fittingly located in a wide and marshy valley. The valley, which is about 350 feet above sea level, is surrounded on three sides by steep mountain ridges with Cincang Sebarau (3,114 feet above sea level), Gunung Hitam (3,970 feet), and Bukit Resam Ambat (3,771 feet) in the northeast, and Bukit Batu Bulan (3,306 feet) in the east. Sg. Lui is the most important river in Kg. Paya Lebar as it meanders right through the village.

Kg. Paya Lebar, a sedentary Temuan village has a population of 86 people. Its demographic and socio-cultural aspects are discussed in the following sections. The components of the Paya Lebar Temuan ecosystem are as follows: the forest, the rivers, the cultivated environment (*sawah, dusun,* rubber-holdings, home gardens and *ladang*), and the external environment (Malay *kampung* and other Temuan *kampung*).

FIGURE 4
Location of Kg. Paya Lebar

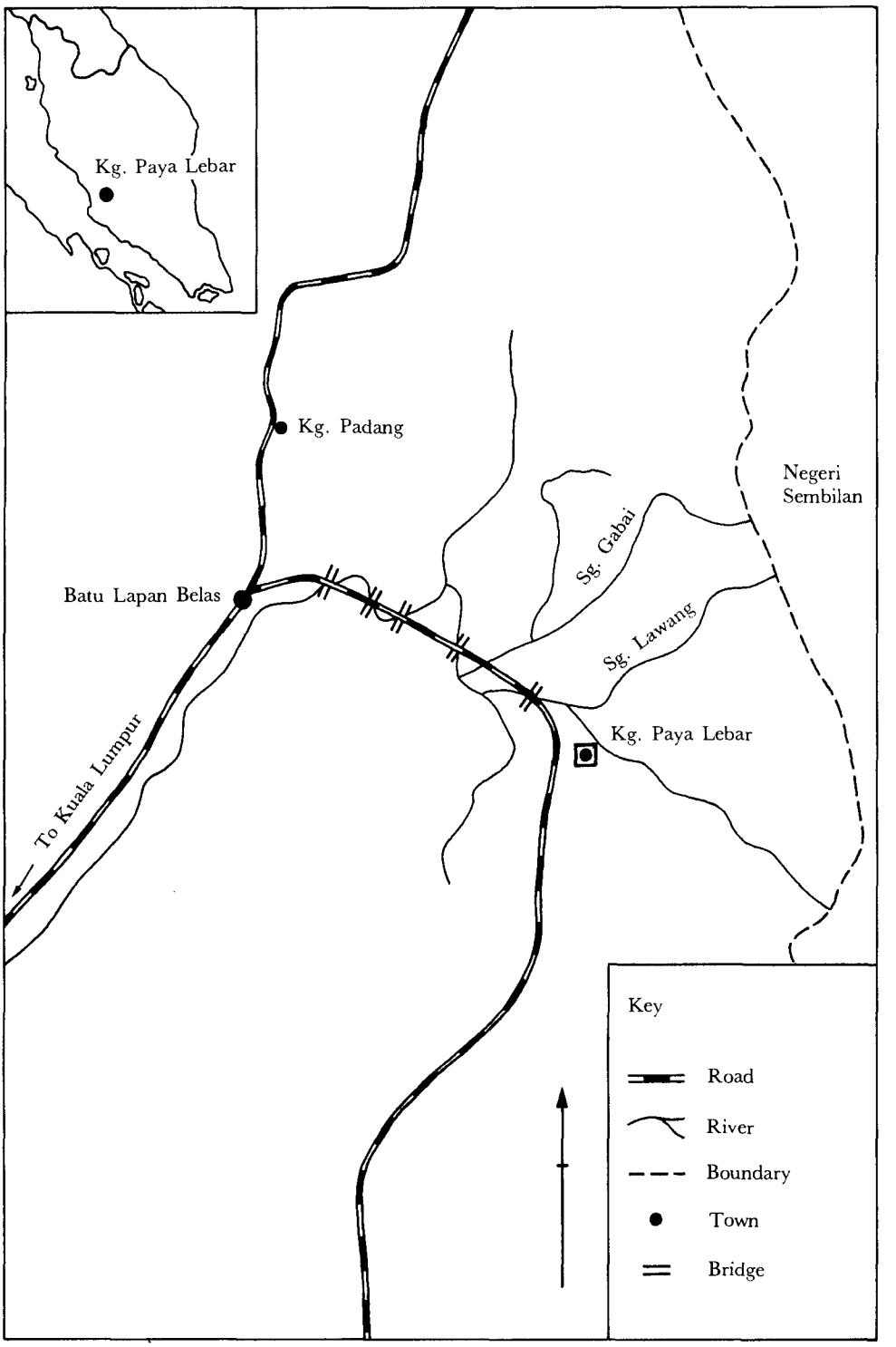
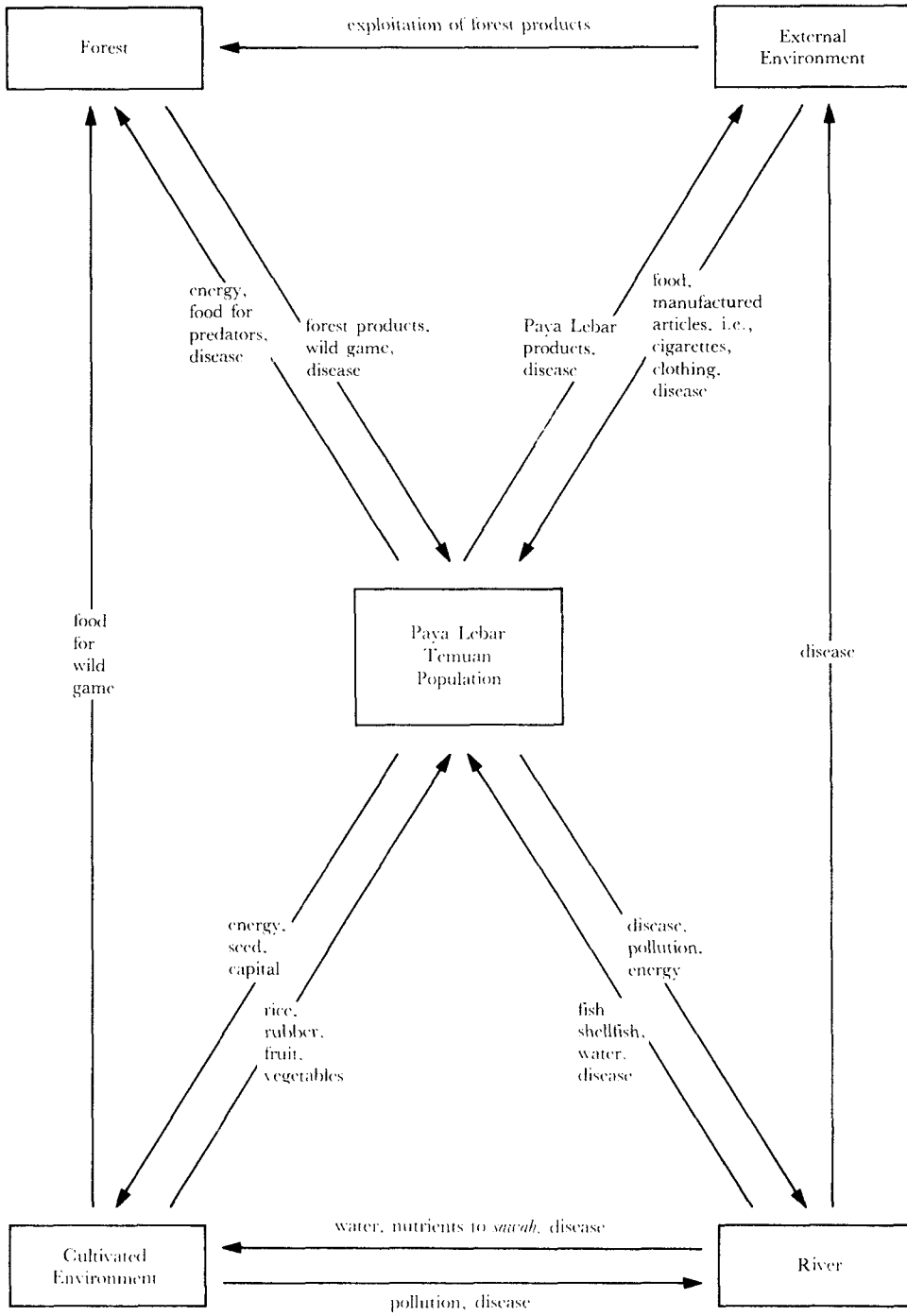


FIGURE 5
Paya Lebar Ecosystem



Cultivated environment

This component can be divided into *sawah* (wet rice cultivation), rubber cultivation and tapping, *dusun* (fruit orchard), and home gardens.

Wet rice is grown mostly for home consumption. Approximately 14 acres of land are used to cultivate three different varieties of rice, i.e., "Mahsuri," "Pulut," and "Malinja." Every Paya Lebar Temuan family grows rice either once a year or once every two years. Some may even grow rice twice in one year.

The cultivation of wet rice requires a high input of energy which is spread out in a number of related activities such as preparation of rice fields, weeding, engineering irrigation and drainage canals, guarding the ripening rice from pests, harvesting, threshing, winnowing, and drying. In return for the energy expended on the cultivation and processing of rice, the Temuans are able to fulfill their nutritional requirements in the form of rice from the fields.

The padi seeds are normally planted in nurseries either in August or September. Planting is done by both men and women. The seeds are planted very closely in a small plot. Meanwhile the fields are hoed and dykes and canals are constructed. Protecting the young shoots from pests demands considerable energy and time. These shoots are transplanted in the prepared fields either in October or November. About one week after transplanting, water from the Lui River is channelled through the canals into the fields to add essential nutrients for the healthy growth of the rice plants. Irrigation of the *sawah* demands considerable engineering skills, especially in regulating the quantity of water as too much water can be detrimental to the growth of the rice plant. Shortly before the rice ripens, the water is drained from the fields. During the ripening stage the *sawah* plots must be continuously guarded from pests such as rice birds, field rats, and insects. Various devices, such as scarecrows, are used to chase away the birds. Every member of the Temuan family is in some way or another involved in guarding the ripening padi from pests. It is common to find young children armed with slingshots trying to shoot at the rice birds. Rice is normally harvested in April. Harvesting is done by men and women using either a sickle or a *tuai*. The padi is threshed and dried in the sun. It is then stored for future consumption.

The rice yield at Paya Lebar is relatively high when compared with yields from other rice growing areas. The average acreage of ricefields per family is about 0.7 acres. Most Paya Lebar families do not obtain enough rice from their fields to meet their total annual rice demands and so they still have to buy rice from the shops in the nearby Malay *kampung*. The rice yield is dependent on the size of the pest populations attracted to the ripening rice grains. The Paya Lebar Temuans and the neighboring Malay farmers normally plant their rice at different periods. Hence, during the ripening stage of the rice grown in Paya Lebar, the whole pest population from the surrounding habitat congregate at the Paya Lebar *sawah* to feast on the rice grains. This means the Temuans have to spend more time and energy guarding their fields.

Rubber growing is also an important economic activity and it contributes much to the Temuans' cash income. There is an average of three acres of rubber holdings per household in Paya Lebar. Temuans have been growing rubber for about twenty years. Rubber growing involves four activities: tapping, processing, transporting, and selling of rubber sheets or latex. Latex is collected about twice a week with tapping being quite dependent on the weather. The Temuans do not tap on rainy days or during the rainy season. Tapping is done by men, women, and older children (about ten years and above). After the trees are tapped, the latex is collected in cans and carried to a small shed with two rollers. It is processed into rubber sheets and then sun-dried before sale. It is not smoked. The processing activity requires the use of formic acid which acts as a catalyst in the coagulation of the rubber. However, in order to avoid the trouble of processing, some Temuans sell their rubber produce in the form of liquid latex to a rubber dealer about one

kilometer away from the village. Latex is sold at about 80 cents per *kati* [1] and rubber sheets at about 66 cents per *kati*. To most Temuans in the village, the sale of rubber sheets or latex is the main source of cash income. This income is used to buy essential provisions from the shops.

Apart from these agricultural activities, the Paya Lebar Temuans also devote some time and energy to the planting of fruit trees, vegetables, and some other useful plants around their houses. Although these home-gardens are small and the plants grown are limited in number, they are important supplementary sources of food to the Temuans.

Forest

Although the Paya Lebar Temuans are settled agriculturalists, they partake in forest economic activities such as hunting, gathering, and collecting forest products. As the *kampung* is located close to the forests, the Temuans go to the forest during their free time to hunt, trap wild game, or gather various forest products.

Hunting, although diminishing in significance, constitutes a major part of the Temuan's activities. They depend largely on shotguns, blow-pipes, spears, traps, and snares to provide them with a free supply of animal protein. Almost all the game obtained is for the Temuans' own consumption; however, sometimes excess meat may be sold. Hunting, which involves only men, keeps the Temuans in close interaction with the tropical forest environment which surrounds their settlement. Nowadays, their main problems in hunting are, firstly, the lack of time to spend on this activity since they are busy with rice cultivation and rubber tapping, which are more profitable in terms of cash. Secondly, the dwindling animal population makes hunting difficult and unproductive.

Forest gathering and collection contributes both to the Temuans' cash income and to their subsistence needs. The Temuans make substantial earnings from the sale of wild durians, *petai* (Parkia speciosa), rattan, and bamboo. Besides this, the Paya Lebar Temuans gather a number of other jungle fruit mainly for their own consumption. These are similar to the wild fruit that the Negritos gather.

Rattan collecting is also of considerable importance to the Paya Lebar Temuans. However, they have to wander far to search for this item, sometimes even as far as the Genting Highlands. As was mentioned earlier in the discussion of the Negritos' ecosystem, rattan collecting is a very arduous activity. As such it is only the younger men who wander far to collect rattan. Older men, women, and children limit their collecting in the nearby forests. Bamboo collection is another forest-related economic activity, but one of less importance since bamboo fetches a low price. Furthermore, the collection is difficult as the Temuans have to go quite deep into the forest to obtain the item. This makes transporting cut bamboo a difficult task. Thus, Paya Lebar Temuans collect bamboo mostly only for personal use, particularly for the construction of their houses and the making of blow-pipes and traps. Besides using bamboo for house construction, the Temuans also collect timber (especially Ochanostachys, Dipterocarpus, Polyscias) from the nearby forests for the framework of their houses, *bertam* (Eugeissona tristis) leaves for the thatched roofing, and rattan (*Calamus* sp.) for securing the joints. The Paya Lebar Temuans also collect *mengkuang* leaves (*Pandanus* sp.) which are woven into mats, bags, or baskets. In addition, Paya Lebar Temuans, especially the older ones, gather and collect roots, leaves, and flowers from some wild plants for use in making traditional remedies and medicines. Sometimes parts or wastes of wild animals are also collected for medicinal antidotes. For instance, the horns and wastes of the wild goat are important in the making of health tonics. Although these medicines are mostly for their own use, sometimes it is also sold to outsiders. The *batin* claims that he earns an average of $50.00 per month from the sale of herbal remedies and other traditional medicines to Chinese, Indians, and

[1] A *kati* is equivalent to 600 grams.

Malays. Besides this, some mushrooms are collected by the Paya Lebar Temuans to make contraceptive and abortifacient concoctions.

Rivers

The Paya Lebar Temuans are very dependent on the streams and rivers especially the Sg. Lui and its many tributaries. Other rivers useful to the Temuans are Sg. Sekiau, Sg. Lawang, Sg. Peres, Sg. Ropok, and Sg. Pasir Putih. The Temuans seldom fetch drinking water from the Sg. Lui; rather, drinking water is channelled through ingeniously constructed bamboo pipes from other tributaries. The Temuans claim the Sg. Lui is contaminated as the river is used for bathing, laundry, and toilet purposes. However, on occasion, they also use the *pancur* (bamboo pipes) for bathing and washing clothes.

Sg. Lui is important in the agricultural activities of the Paya Lebar Temuans. Water, rich in nutrients from the Sg. Lui, is channelled through irrigation canals to irrigate the *sawah*. Since the Paya Lebar families are primarily wet rice cultivators, the irrigation water from the Sg. Lui is of cardinal importance.

The rivers also serve as good fishing grounds for the Paya Lebar Temuans although, due to excessive fishing, there are now few large fish and shellfish in the rivers. However, fishing is still an important activity. A variety of mostly small fresh water fish and other edible creatures are caught by using *Tuba* roots as poison, spear guns, nets, hooks and lines, fish traps (*luka, bubu*), and bare hands (*menggagau*). The products from this activity are important protein supplements to the Paya Lebar Temuan diet.

The rivers are also domains for various micro-organisms that cause certain diseases. The rivers transmit these micro-organisms downstream to the Malay *kampung*. However, the Temuans are also exposed to some of these micro-organisms which make them sick.

Malay kampung (external environment)

Like the Rual Post Negritos, the Paya Lebar Temuans are very dependent on the external environment for their existence. They sell their products either to shops at Kg. Lui or to shops at Batu 18, a small town about nine kilometers from Kg. Paya Lebar. Among the products usually sold are rubber sheets or latex, rattan, local medicines, fruits, especially durians, some wild plants, wild roots, and frogs. With the money earned from these sales, the Temuans buy essentials such as cooking oil, kerosene, rice, biscuits, cigarettes, and clothing.

This mutual trading relationship between Kg. Paya Lebar Temuans and the Malays of Kg. Sg. Lui has a competitive aspect. The Paya Lebar Temuans compete with the neighboring Malays in the exploitation of the nearby forests. The latter normally wander in the forests to search for bamboo for their "joss-sticks" home industries. This results in bamboo becoming a scarce item for the Temuans. Furthermore, in their bamboo collecting trips, the Malays also gather and collect any valuable forest products that they chance upon.

Apart from competition for forest products, competition also exists in the sale of rubber. The neighboring Malays own relatively larger plots of rubber trees than the Temuans, and use more careful processing. Thus, they produce higher grade rubber than the Temuans. Consequently, the Temuans get a relatively lower price for their rubber.

This competition has aggravated the Temuans' general dislike for the Malays, which has existed ever since the Malays drove the Temuans into the hinterlands by their migration into the area. The migrant Malays' persistent demand for land, coupled with the brief skirmishes that resulted when these demands were not complied with, had driven the Temuans away from their original areas. This desire for land among the Malays still exists. In fact, during the time of this study, some Malays demanded some Temuan *sawah* land. However, the *batin* refused to comply with their demands. The Malays, angered by this refusal, began to disturb the Temuans at night. The Temuans retaliated by

threatening to shoot the Malays with their blow-pipes. This, as the Temuans expected, stopped the Malay trouble-makers from creating further incidents.

POPULATION CHARACTERISTICS

This section describes the population of the Rual Post Negritos and Paya Lebar Temuans in terms of their sex ratio, age composition, population pyramid, and household composition. Marital characteristics of the two populations in terms of type and status conclude this section.

Sex Ratio

The sex ratio, which is the principal measure of sex composition, is usually defined as the number of males per 100 families, or

$$\frac{Pm}{Pf} \times 100$$

where Pm represents the number of males and Pf the number of females. The sex ratio of the Negrito population at Rual Post is 95.9 and that of the Kg. Paya Lebar Temuan population is 138.9. This shows that there is an excess of females (1.6 percent of the total population) in the Negrito population and an excess of males (16.3 percent of the total population) in the Temuan population. Sex ratios for particular age groups were not computed because the very small size of each cohort results in great random variation. However, the sex ratio of each age cohort is still important in describing the two communities, since if there are only a few girls of marriageable age in one cohort males will have to seek wives elsewhere.

Age Composition

Age determination was a major problem in the demographic survey of the two communities in this study. The *orang asli* generally are not concerned with calender ages and only categorize individuals as old, middle-aged, and young. A number of social scientists (Howell 1976) have suggested methods for age estimation in studies of populations where people do not know their age. A combination of three methods, namely, Identity Card (IC) age estimation, relative age rankings, and an event calender were employed in this study. The age of the respondent on his IC was used as the basis for the enquiry.[2]

The respondent was then asked whether he was older or younger than some of the people whose ages were already determined. Using this method a schedule was drawn showing the relative age ranking of the individuals in the population being surveyed. To check the age of the individual, the method of an event calender was employed.[3] The events used in this study were limited to only a few dateable events, i.e., 1942–1945 Japanese Occupation, 1946–1960 Communist Insurgency and Emergency, 1957 Independence Day, 1967 disastrous floods, and 1969 May 13 Riots. The ages were checked a number of times to ensure against over- or under-estimation or misreporting. However, the possibility of some errors occuring cannot be denied. But, these errors are minimized when the data are grouped into five-year cohorts.

Both the Rual Post and Paya Lebar populations can be characterized as relatively young. The mean ages among the Rual Post Negritos and the Paya Lebar Temuans were 19.5 years and 20.1 years, respectively. About half (50.8 percent) of the Rual Post

[2]This figure was used as it is an estimate made by another person (registration officer).

[3]An event calender construction consists of making a chronological list of memorable events that can be absolutely dated from written records, e.g., wars, natural disasters, visits of royalty, etc., and attempting to find out whether individuals were born before or after each of these (Howell 1976: 232).

population and 48.8 percent of the Paya Lebar population were under 14 years (see Tables 2 and 3). Fix (1971) considered the Semai population in Satak Area, Perak, as young because it had a mean age of about 25 and some 31 percent of the population were under 14 years of age. However, some demographers (Shryock 1976) regard populations with medians under 20 as "young," those with medians 30 and above as "old," and those with medians 20 to 29 of "intermediate" age. As a further indication of the youth of the two populations studied, it was computed that only 13 percent of the Negrito population and 19.8 percent of the Temuan one were in the post reproductive ages, i.e., above 40. Finally, both the populations can be considered as having high potentiality for growth as 41.5 percent of Negrito female population and 44.4 percent of Temuan female population were in their reproductive years, i.e., 15 to 44.

TABLE 2
Age/Sex Distribution of Rual Post Negrito Population (1978)

Age Category (years)	Male	Female	Total	
			No.	%
60 and above	2	2	4	2.1
55-59	3	2	5	2.6
50-54	—	5	5	2.6
45-49	1	1	2	1.0
40-44	7	2	9	4.7
35-39	4	2	6	3.2
30-34	6	8	14	7.2
25-29	9	4	13	6.7
20-24	6	13	19	9.8
15-19	7	11	18	9.3
10-14	13	11	24	12.4
5-9	19	18	37	19.2
0-4	18	19	37	19.2
TOTAL	95	98	193	100.0

TABLE 3
Age/Sex Distribution of Population at Kg. Paya Lebar (1978)

Age Category (years)	Male	Female	Total	
			No.	%
60 and above	—	—	—	—
55-59	2	—	2	2.30
50-54	1	—	1	1.16
45-49	2	2	4	4.65
40-44	6	4	10	11.60
35-39	—	1	1	1.16
30-34	—	2	2	2.30
25-29	5	1	6	6.98
20-24	6	4	10	11.60
15-19	4	4	8	9.30
10-14	8	5	13	15.10
5-9	7	8	15	17.40
0-4	9	5	14	16.30
TOTAL	50	36	86	100.00

Population Pyramid

The population pyramid is designed to give a detailed picture of the age-sex structure of a population. Population pyramids for the Rual Post Negritos and the Paya Lebar Temuans are shown in Figures 6 and 7. Ages were grouped at five-year intervals. The pyramids are based on absolute ages, as only these pyramids can show the difference or changes in the overall size of the total population and in the number of persons at each age group.

It will be noted that the pyramids have many irregularities. These probably reflect random variations inherent in small populations. With total populations of only 195 Negritos and 86 Temuans, it is not possible to obtain regular pyramids. From the shape of the Rual Post Negrito pyramid, it can be stated that the population is stable. The pyramid also shows that there are more females than males in the age category of 15 to 24 years. The relatively fewer females in the 35 to 49 age category can be due to the higher rate of maternal mortality during childbirth and the susceptibility of contracting fatal diseases during this period. In the Paya Lebar pyramid, there is a notably small group of both males and females in the 30 to 39 age category. This probably reflects low natality and high infant mortality associated with difficult times (malnutrition, disease, etc.) experienced by the Temuans during the Japanese Occupation and the Emergency since these times marked the height of the disruption (Fix 1977). The small number of individuals aged 50 years and above can probably be attributed to warfare with migrant Malays and epidemics. One informant stated that in the earlier part of the 20th century (1900 to 1920) the Temuans were constantly harassed by migrant Malays because of the latter's desire for land. This led to a number of territorial disputes in which many Temuans were killed. There were several stories told by the older members of the village of their fights with the Malays. There were also said to be a cholera epidemic around 1925 when approximately 50 people died.

Household Composition

According to Shryock and Siegel (1976: 170), "a household consists of all the persons who occupy a housing unit." The household was more easily defined in Kg. Paya Lebar than in Rual Post. In Kg. Paya Lebar, a household mostly consisted of a family. In Rual Post, there were quite a number of cases where a housing unit was occupied by more than one family.

Findings on the household structure of both the populations showed that there were altogether 17 households with an average of 5.1 persons per household in Kg. Paya Lebar and 30 households with an average of 6.4 persons per household in Rual Post. None of the Paya Lebar households contained more than two generations while 30 percent of those in Rual Post had more than two generations. Twenty-nine percent of the Paya Lebar households and 40 percent of the Rual Post ones were of the extended family type. In Paya Lebar, 71 percent were of the nuclear family type. The corresponding figure in Rual Post was 60 percent.

Marriage Type

Marriage types in the Negrito population were analyzed at the band level whereas for the Paya Lebar Temuans it was at the village level. From a total of 41 married Negrito couples in the Rual Post area, 27 (66 percent) had taken spouses from other Negrito bands and 14 (34 percent) married within the band. To put it another way, about two out of three marriages in the band were exogamous in nature. Again analysing at the band level, 19 (70.4 percent) out of the 27 band exogamous marriages were patrilocal in nature, i.e., the female spouses became members of their husbands' bands and 8 (7.6 percent) were matrilocal, i.e., the males left their bands to join their wives' bands. This suggests that although there are statistically more exogamous and patrilocal marriages than

FIGURE 6
Rual Post Negrito Population

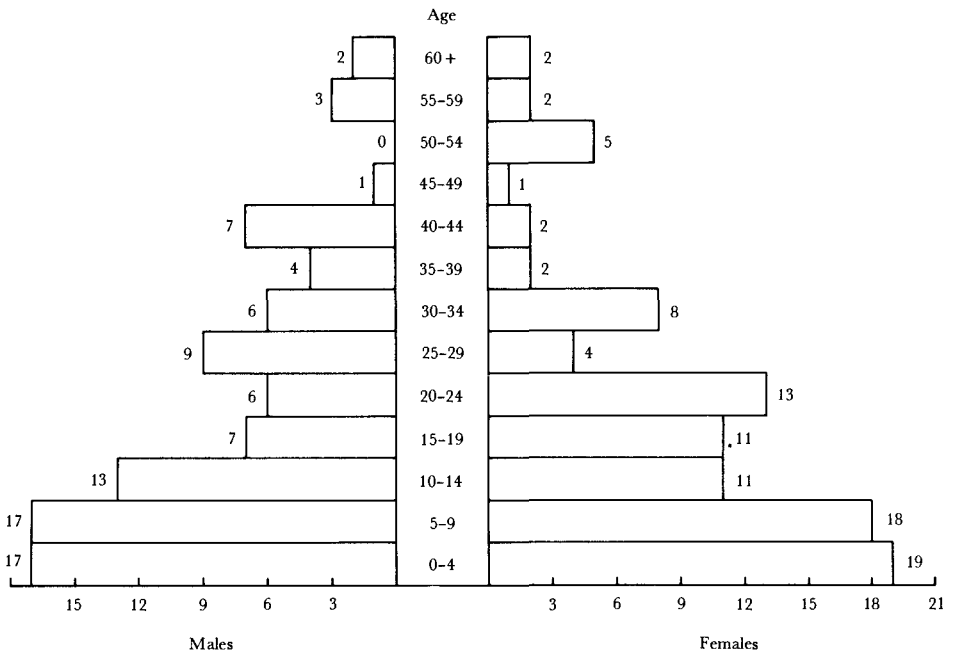
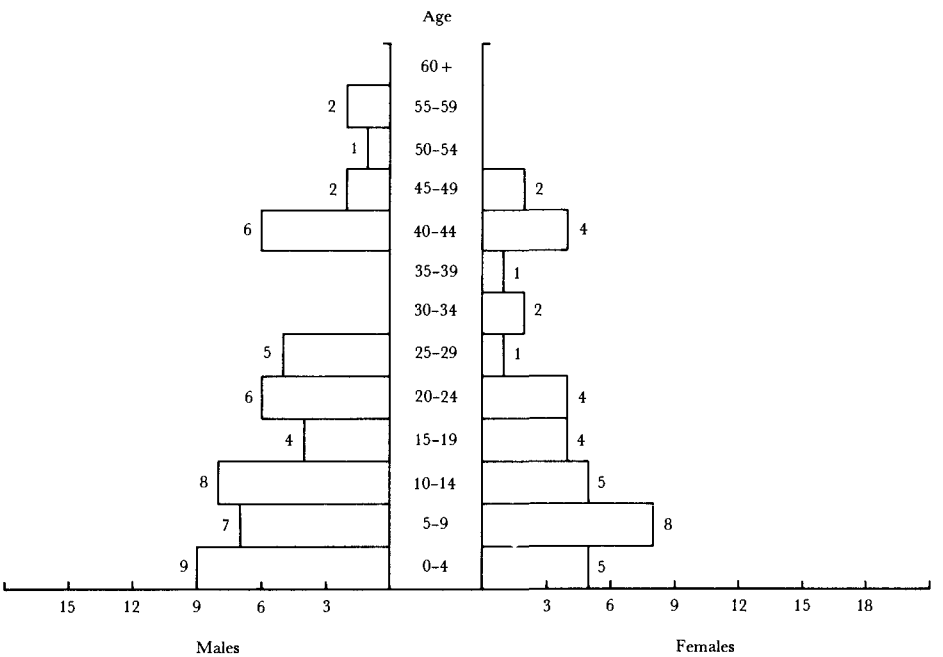


FIGURE 7
Paya Lebar Temuan Population



endogamous and matrilocal ones, band exogamy and patrilocality are not strictly followed among Rual Post Negritos as there were many exceptions. There were only two cases of polygamous marriages noted.

Out of a total of 17 married couples in Kg. Paya Lebar, 9 (53 percent) had taken their spouses from other Temuan villages and 8 (47 percent) couples married within the village. Four (44 percent) of the nine exogamous marriages were matrilocal in nature, i.e., the male spouses migrated from their home villages to settle in their wives' village (Kg. Paya Lebar) and five (56 percent) were patrilocal, i.e., the brides took up residence in the village of their husbands. Among the eight endogamous marriages, 7.5 percent were neolocal and only one was of matrilocal residence. Although Temuans are allowed to have more than one spouse at a time, there was no case of polygamous marriages in Kg. Paya Lebar.

Marital Status

Tables 4 and 5 show the marital status among the Rual Post Negritos and the Paya Lebar Temuans. Out of 95 Negritos that were 15 years old and above, two (2.1 percent) were never married, 93 (97.9 percent) had been married at least once, ten (10.5 percent) were widowed, and three (3.2 percent) were divorced. Among the 44 Temuans who were 15 years old and older, 9 (20.5 percent) were unmarried, 33 (75 percent) were married, 1 (2.3 percent) was divorced, and 1 (2.3 percent) was widowed.

Summary

To summarize, there were 195 Negritos at Rual Post and 86 Temuans at Kg. Paya Lebar. The sex ratios of the two groups differed significantly. That of the Negrito population was 95.9, whereas for the Temuans a sex ratio of 138.9 was computed. There were more males than females in Kg. Paya Lebar but in Rual Post, the opposite situation, i.e., more females than males, was seen. Both the populations were young, with a mean age of 19.5 years and 20.1 years for the Rual Negritos and Paya Lebar Temuans, respectively. It was found that 50.8 percent of the Rual Negritos and 48.8 percent of the Paya Lebar Temuans were above 40 years old.

The Rual Post Negrito population was distributed into bands with an average of 32 persons per band, whereas the Temuans were only distributed into families. The household was more easily defined and recognized in the Temuan settlement than it was in Rual Post. Regarding the Negritos' marital characteristics, a majority (70.4 percent) of exogamous marriages were patrilocal. There were two cases of polygamous marriages. For the Temuans, there was almost an equal number of village exogamous and endogamous unions. Out of the nine exogamous unions, four were matrilocal and five

TABLE 4
Distribution of Living Population of Rual Post Area by Age, Marital Status, and Sex

Age (years)	Never Married		First Marriage		Second Marriage		Widowed		Divorced		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
0-14	50	46	—	2	—	—	—	—	—	—	50	48
15-29	1	1	20	27	—	—	—	—	1	—	22	28
30-44	—	—	12	10	3	1	2	1	—	—	17	12
45 and above	—	—	2	2	3	—	—	7	1	1	6	10
TOTAL	51	47	34	41	6	1	2	8	2	1	95	98

TABLE 5
Distribution of Living Population of Kg. Paya Lebar by Age, Marital Status, and Sex

Age (years)	Never Married		First Marriage		Second Marriage		Widowed		Divorced		Total	
	M	F	M	F	M	F	M	F	M	F	M	F
0-14	24	18	—	—	—	—	—	—	—	—	24	18
15-29	7	2	8	7	—	—	—	—	—	—	15	9
30-44	—	—	4	5	1	2	1	—	—	—	6	7
45 and above	—	—	2	2	2	—	—	—	1	—	5	2
TOTAL	31	20	14	14	3	2	1	—	1	—	50	36

were patrilocal. In the age group 15 years and above there were more unmarried Temuans than Negritos.

FERTILITY

"Fertility" refers to actual birth performances, as compared with fecundity, which refers to the physiological capacity to reproduce. Social scientists are particularly interested in fertility statistics as these portray the role of birth in population change. Nag (1962: 15) describes a variety of measures for the fertility of primitive populations. Of these, four measures, namely, child-woman ratio, total maternity ratio (TMR), maternity ratio (MR), and crude birth rate (CBR) were chosen to provide some idea of the fertility levels of the two populations studied. These rates and ratios are given in Table 6. Tables 7-10 provide more details on the fertility of the Rual Post Negritos and Paya Lebar Temuans.

Table 7 shows that there was a considerable increase in the fertility level of the Rual Post Negritos in a span of two years (1976-1978). The child-woman ratio and crude birth rate suggest this increase to be astronomical. There is an increase of 76 percent and 157 percent in the Negrito child-woman ratio and CBR respectively as compared to an increase of only four percent in the Negrito TMR and 35 percent in the MR within a span of two years. These great percentage increases of the Negrito child-woman ratio and CBR can be statistically explained. First of all, both the measures are affected by mortality patterns. As the mortality statistics presented in the following section show, there was an increase in the deaths of women in reproductive ages without a comparable increase in the mortality of children (below age five). Secondly there was a great improvement in the birth performance of some married women especially those belonging to the 15 to 19 age cohort. It can be inferred from Table 7 that women in the 15 to 19 age cohort had an average of one child each in 1978 compared to none in 1976. This is so because at the time of the 1976 survey of the Rual Post population, most of the women in the 15 to 19 age cohort were newly married and there had been insufficient time for conception. Consequently, they bore their first child only in 1977. Therefore, much of the apparent sharp increase in the level of births was due to the birth performance of these newly-weds. Nevertheless, it is undeniable that there is also a general increase in the fertility level of the whole Rual Post population although the increase is not as astronomical as that which the child-woman ratio and the CBR suggest.

A comparison of the Paya Lebar Temuan and Rual Post Negrito groups shows that all of the Paya Lebar fertility rates and ratios are higher than those of the 1976 Rual Post rates and only the Paya Lebar's TMR and MR are higher than the 1978 Rual Post rates.

TABLE 6
Fertility Rates and Ratios for the Rual Post Negrito and Paya Lebar Temuan Populations

Fertility Measures	Rates/Ratios		
	Rual Negritos (1976 data)	Rual Negritos (1978 data)	Paya Lebar Temuans
Child-woman ratio	520	925	875
Total maternity ratio	4.16	4.33	6.00
Maternity ratio	2.16	2.92	4.81
Crude birth rate	27.7	71.1	35.1

As the mortality statistics of Paya Lebar shows, there is high child mortality in this population. The difference in percentage between dead women in reproductive age (14.5 percent) and children below five years old (41 percent) is considerable. Therefore, if statistical adjustments were undertaken in consideration of the mortality patterns in the two populations, the Temuan child-woman ratio would be higher than 875 and the Negrito child-woman ratio would be lower than 925. This means that the Paya Lebar adjusted child-woman ratio would be higher than the Rual Post adjusted child-woman ratio (based on 1978 data). A Paya Lebar ever-married woman has an average of five live-born offsprings compared to an average of three live-born offsprings per ever married Negrito woman in the Rual Post resettlement area.

After some adjustments in the child-woman ratio and CBR it is clear that the Paya Lebar Temuan population has a higher fertility level than the Rual Post Negrito one. Possible explanations for this difference will be discussed more fully in the following sections.

FACTORS CAUSING DIFFERENCES IN FERTILITY

Social scientists have elaborately discussed factors that affect fertility. These factors have been classified as socio-cultural and biological. Socio-cultural factors derive from social customs, such as post-partum sexual abstinence, age at marriage, sexual abstinence during certain seasons or periods, contraceptive practices, frequency of coitus, and abortion. These factors are said to be conditioned by fertility motivation which is in turn moulded by the value and cost of children in that society. Some social scientists claim that the value and cost of children (Leibenstein 1975; Namboodiri 1972; Easterlin 1969; Nag 1962) possess economic attributes. Economic behavior, especially among primitive societies, is in turn largely influenced by the environment.

Biological factors, such as general health conditions, disease, sterility, diet, and length of fertile period, are undoubtedly conditioned by the social and physical environment. For example, diet is dependent on economic activities such as hunting and gathering, rice cultivation, etc., which are in turn dependent on the environment. A resource poor environment will result in little produce from the exploitative strategies and will consequently result in poor diet.

Figure 8 illustrates the inter-relationships of the principal factors that affect fertility. The following sections will discuss each of the factors in the "fertility mechanism" and relate them to the differences in fertility between the Rual Post Negritos and the Paya Lebar Temuans.

TABLE 7
Number of Children Born to Living Ever Married Women, by Age, Rual Post Negritos and Paya Lebar Temuans

Age Category (years)	No. of Women			No. of Children			Mean No. of Children per Woman		
	Negrito 1976	Negrito 1978	Temuan 1978	Negrito 1976	Negrito 1978	Temuan 1978	Negrito 1976	Negrito 1978	Temuan 1978
15-19	10	7	2	0	7	0	—	1.0	—
20-29	13	18	5	28	41	20	2.15	2.3	4.0
30-39	8	10	3	28	48	22	3.50	4.8	7.3
40-49	6	3	6	24	15	35	4.00	5.0	5.83
TOTAL	37	38	16	80	111	97	2.16	2.92	4.81

TABLE 8
Number of Live-born Offsprings of Rual Post Negrito Women Whose Reproduction Is Complete Based on 1976 Data

Mother	No.	No. of Offsprings 1	2	3	4	5	6	7	8	$\bar{X}$	σ
Alive (>40 years)	12	—	3	2	2	2	2	—	1	4.10	3.5
Dead (25-60 years)	27	4	4	9	4	1	4	1	—	3.37	5.2
TOTAL	39	4	7	11	6	3	6	1	1	3.62	6.2

TABLE 9
Number of Live-born Offsprings of Rual Post Negrito Women Whose Reproduction Is Complete Based on 1978 Data

Mother	No.	No. of Offsprings 1	2	3	4	5	6	7	8	$\bar{X}$	σ
Alive (>40 years)	12	—	1	5	1	2	—	1	2	4.50	3.4
Dead (25-60 years)	29	4	4	11	4	1	4	1	—	3.34	5.4
TOTAL	41	4	5	16	5	3	4	2	2	3.68	6.4

FIGURE 8
Fertility Mechanism

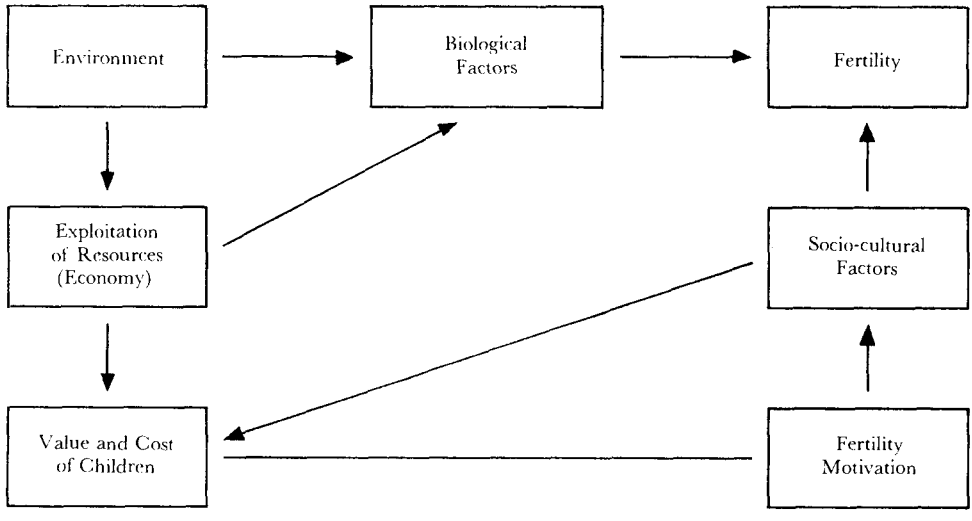


TABLE 10
Number of Live-born Offsprings of Kg. Paya Lebar Temuan Women Whose Reproduction Is Complete

Mother	No.	No. of Offsprings											$\bar{X}$	σ
		0	1	2	3	4	5	6	7	8	9	10		
Alive (>40 years)	6	—	1	—	1	—	—	—	1	2	1	—	6.0	2.5
Dead (25–60 years)	10	1	1	2	—	—	2	1	1	1	—	1	4.6	3.2
TOTAL	16	1	2	2	1	—	2	1	2	3	1	1	5.1	4.0

Environment

The Rual Post Negritos and Paya Lebar Temuans occupy quite similar habitats. Both the settlements are located close to the fringe of the rain forest. The two settlements are also in close contact with neighboring Malay agriculturalists and Chinese traders. The Negritos, however, occupy a zone which ecologists refer to as an ecotone, which is "a transitional zone between two major natural communities where plants and animals tend to be particularly diverse and abundant."[4] By occupying this ecotone, the Negritos can tap forest resources as well as trade with the Malay settlement. The Paya Lebar Temuans do not inhabit an ecotone in the same sense as the Negritos do. They occupy a whole zone, i.e., they are forest agriculturalists, rather than two different zones, i.e., forest and Malay *kampung*. Finally, both the settlements are close to rivers as they are dependent on it for water and fresh water edible food.

However, there is a difference between the two areas. The Paya Lebar area, being a flat swampy land, has relatively more fertile soil than the hilly Rual Post area. This makes Paya Lebar a good wet rice cultivating area.

Economic Activities

As stated earlier the Rual Post Negritos are predominantly hunters and gatherers while the Paya Lebar Temuans are agriculturalists. There are three major differences between these two economic modes. Firstly, a hunting and gathering economy necessitates a nomadic way of life while agriculture involves a relatively more settled one. The forest resources at any one place are limited for exploitation and when the resources at that place are depleted, the foragers have to move on to other areas.

Secondly, the two group's different economic activities result in different future orientations. The Negritos being hunters and gatherers live on a day-to-day basis with very little concern for the future. The Paya Lebar Temuans, on the other hand, are relatively more concerned with the future. In their rice cultivating activities, there is a long lapse of time between the planting and harvesting of rice. The Temuans labor in their fields with the expectation that they will be rewarded for their efforts in the future.

Thirdly, agriculture is more labor intensive than hunting and gathering. It is undeniable that farming, especially among primitive populations, often implies labor-intensive activities. The productivity is dependent on the soil fertility, the labor input, the crop grown, and the extent of land cultivated. The last is dependent on the labor potential. If there is high labor potential in a household, the family is able to till more land. Hence, labor is of cardinal importance in agricultural societies. In contrast, hunting and gathering households do not benefit from having more members as each person's productivity is very limited.

Value and Cost of Children

Demographers and others concerned with population matters have increasingly been interested in the value and cost of children primarily because these social qualities appear to be closely related to fertility behavior.

After reviewing much of the literature on the value of children, three hypotheses as to the relation between the value of children and actual fertility behavior were posited. They are as follows:

1. Other things being equal, couples have fewer children in cases where the woman's time has a comparatively high value in alternative uses, that is, uses other than child care. This appears to be true among the Rual Post Negritos. A Negrito woman, as mentioned earlier, contributes substantially to the economic and physical well-being of her family. She specializes in the gathering of tubers, plants, fruits, etc., and fishing for the consumption of her family. Her gathering activities occupy a lot of her time and energy as

[4]Personal communication with A.T. Rambo, JOA field officer.

it requires considerable wandering in the forest to search for the right ingredients for the meal. Therefore, if a Negrito woman has a young child, i.e., less than four years, the efficiency of her gathering activity is considerably reduced as she has to divide her time and energy between child care and gathering.

A Paya Lebar woman, on the other hand, does not have to carry her children and household possessions around on a nomadic cycle. Furthermore, the Temuan woman can leave her child with its elder sibling, etc. As such she has relatively more time for child care than her Negrito counterpart.

2. Other things being equal, couples have more children if the children make considerable contributions to household production and income, both as children and as adults. This is where the economic value of children is high.

Among the Temuans, children appear to make major economic contributions at an early age. Unlike the Negrito children, some Temuan children may even start contributing economically at the age of four. Kg. Paya Lebar Temuans expect their children of either sex to help do household chores such as fetching water, doing the laundry, taking care of younger siblings, cleaning the house and compound, and cooking. The children are also expected to do *sawah* work such as weeding, harvesting, and chasing away rice birds and other pests. Tapping rubber trees and processing rubber into rubber sheets, gathering wild tubers, plants and fruits, fishing and shooting birds, and collection of forest products such as rattan and bamboo for sale are also tasks expected of Temuan children. An ordinary day for a Temuan family of five, i.e., parents, a daughter aged about ten, two sons, seven and five years old, consists of the father out hunting for squirrels or monkeys with his *sumpitan* (blow-pipe), the mother with her seven year old son setting out at daybreak to tap and process rubber, the daughter doing the laundry, cooking and cleaning, and the youngest child being out in the forest and nearby areas with his slingshot shooting birds. In a case like this, we can observe that the mother is allowed more time in productive activities such as tapping rubber since her daughter, who would not be as productive as the mother in tapping rubber, does the laundry and cooking. At his tender age, the youngest child instead of being a burden to the household, adds birds to the daily menu. From this evidence we can conclude that Temuan children are an important asset to their respective households.

Unlike the Temuan children, the Negrito children do not contribute substantially to their households, especially in terms of household production. Instead of giving a helping hand in their household production, Negrito children play most of the day. In their various games young Negrito children usually imitate the activities of adults of their sex. A group of young boys and girls will construct a small shelter of their own, catch fish and gather wild plants, and then cook the food, all copying in miniature what they have seen their parents do many times before. However, with the recent establishment of the school, children who attend school do make contributions by bringing back and sharing with the other members of their respective households "extra" food that is provided by the school as inducements to the children to attend classes. The food (rice, biscuits, and dried fish) that these children take back to their respective homes is an important supplement to the household diet. For the Rual Post Negrito this appears to be the only major benefit of having children. It may relate to the increase in birth rates since resettlement.

3. In situations where children interfere with the culturally or environmentally sanctioned lifestyle, there would be a tendency to limit the number of children. A hunting/gathering economy involves a nomadic lifestyle, a lack of future orientation, and low labor demand, whereas the agricultural style is settled with a relatively more definite future orientation and a relatively higher labor demand. With a nomadic lifestyle, it is a burden for women to have young children who would have to be carried around. The extra weight greatly handicaps the mother's mobility. Being hunters and gatherers, a hindrance on the Negritos' mobility consequently affects their economic efficiency.

Having children can be considered as an investment as its gains are only realized in the future. Young children will undoubtedly always be a burden if we consider only the amount of time and energy that has to be spent on child care. Unlike the Temuans, the Negritos are not prepared to make the investment of having children because they are less concerned with the future. Investment is also less likely to pay off for Negritos. They only need one child to support them in old age. As such, three or four would be superfluous. The Temuans, on the other hand, being more concerned with the future, are willing to wait for their efforts in child care to be rewarded in the future when the grown-up child is able to make substantial contributions to the economic well-being of the household. Furthermore, with their high demand for labor, the Temuans have to depend on their children to fill this demand.

Fertility Motivation

If the value of children is high and their cost is low, the fertility motivation is high and there is a great desire for children. On the other hand a low value and a high cost of children will result in a low fertility motivation. In a sample of 18 Negrito ever married men (40 percent of the total number of married men) and 15 Negrito ever married women (29.4 percent), 8 men and 9 women preferred to have three or fewer children; whereas 9 men and 6 women preferred between four and six children. Only one man desired more than six children. Out of the Temuan sample of ten married men and ten married women, two men and three women preferred to have three or fewer children. Four men and an equal number of women preferred four to six children. Finally, 40 percent of the men and 30 percent of the women preferred more than six children. This survey reveals that relatively more Temuans than Negritos prefer a large number of children, and relatively more Negritos than Temuans prefer small families.

Socio-cultural Factors

Demographers and others generally agree that there is likely to be a high level of contraceptive use if there is a high value placed on a woman's time in alternative use other than child care, or a low economic value of children, or if children interfere with the culturally or environmentally sanctioned lifestyle. Contraception, which is a voluntary method of preventing pregnancy, is only one of the socio-cultural factors that the Negritos employ to reduce fertility. The other factors which are possible determinants for the low fertility are the long period of post-partum abstinence, low frequency of coitus, sexual abstinence during certain periods, and abortion. Contraception and abortion are direct factors as these are intentionally employed to prevent pregnancy and stop gestation respectively. Post-partum abstinence, sexual abstinence, frequency of coitus, etc., are indirect social factors that affect the fertility of a society. They are not intentionally employed to reduce fertility but emerge as possible ecological adaptations.

Post-partum abstinence

Abstinence from coitus on the part of a mother for a few weeks immediately after parturition is common in all societies. The period of abstinence varies from society to society. In many societies the period of abstinence is long and may even last for more than two or three years. Abstinence normally takes the form of a taboo in the sense that some kind of supernatural sanction is associated with it. Varied reasons have been given for the existence of the practice of post-partum abstinence. Some societies like Lesu, Masai, and Yako (Nag 1962: 81) believe that pregnancy soon after birth is harmful to the existing child and so coitus is prohibited with the parturient mother. Other societies believe that coitus soon after childbirth affects the mother's health.

There is a general consensus that a long period of post-partum abstinence reduces fertility level. Hence, there is a negative correlation between the length of observance of post-partum abstinence and fertility level.

The period of abstinence varies considerably between the Rual Post Negritos and the Paya Lebar Temuans. Among the Rual Post Negritos the period normally lasts till the child is weaned at an age of about two years. This custom, which is almost certainly a major factor in reducing the fertility level of the Negritos, is generally strictly observed as it is ritually sanctioned. It is believed that if a Negrito does not practice this custom, he will be punished by the thunder god, Karei. This custom is ecologically adaptive. Being hunters and gatherers, having more than one baby at a time is a heavy burden in transporting and suckling. Therefore, abstaining from coitus for two years after birth ensures a birth spacing of at least three years. This means that the child would be past the weaning stage if and when another child is born.

Unlike the hunting and gathering Negritos the sedentary Temuans only normally abstain from coitus for about three weeks to a month till the parturient mother is strong enough for coitus. This relatively short period of abstinence does not have a great effect on the fertility level of the Kg. Paya Lebar Temuan population.

Sexual abstinence

Avoidance of coitus with a menstruating woman is very widespread. This is practiced among the Rual Post Negritos and the Paya Lebar Temuans. However, it is unlikely that abstinence during this period affects fertility as ova are not released during menstruation. As a consequence, however, a man's sperm count might go up, thereby increasing the probability of conception during subsequent intercourse.

Apart from sexual abstinence connected with menstruation, the Negritos also abstain from any kind of sexual behavior during the day as there is a belief that Karei (the Negrito thunder god) would be angered if he spotted a couple engaging in sexual activities in the day and would severely punish the couple. The punishment is believed to be in the form of a violent death either by lightning or an attack by a tiger or other wild animals. The Paya Lebar Temuans do not have such a taboo.

Frequency of coitus

According to Nag (1962: 72) "frequency of coitus is a significant factor affecting human fertility, in view of the fact that the duration of the life of the male and female germ cells in the female uterus and tubes is very short and, hence, fairly close timing is necessary for impregnation." It is a widely accepted belief among demographers that a low frequency of coitus is correlated with low fertility because the chance of the simultaneous presence of the ovum and the sperm in the genital tract of the female becomes slight. However, some demographers believe that excessive frequency of coitus can reduce fertility. Nag (1962) states that "it is extremely difficult to determine an average frequency of coitus that is optimum for reproduction." Some demographers state that an average coital frequency of two or three times per week is optimum for reproduction.

It is, of course, exceedingly difficult to obtain reliable information about actual frequency of coitus since this is affected by the amount of privacy a couple has. In the past and sometimes even now, especially during forest collecting, Negritos stay in lean-tos arranged in a circular form which does not give much privacy to couples. The Temuans have relatively more privacy as their houses are partitioned into two, as a sitting room cum bedroom and a kitchen. A Temuan couple sleep with their children in the same room. On the other hand since the Negritos traditionally had no houses, but only wind-screens with an opening on one side, there was hardly any privacy and intercourse could soon become a public spectacle. At present, the majority of the Negritos stay in houses but these are often so overcrowded that there is still relatively little privacy.

Contraception

Nag (1962: 129) defines contraception as "the adoption of certain devices which temporarily or permanently prevent the formation of the female egg or, although allowing normal intercourse, prevent contraception." In Nag's sample societies, coitus interruptus is the most common form of contraception used. Findings of the present study showed that the Rual Post Negritos and Paya Lebar Temuans do not employ coitus interruptus. However, they employ certain traditional contraceptive drugs.

The Rual Post Negritos employ two types of contraceptives which are locally known as *ubat penjarang* and *ubat pemutus*. These two drugs can also be used as abortifacients. The Negritos believe that the drugs can kill the foetus. The *ubat penjarang* is supposedly a temporary preventive measure and the *ubat pemutus* causes permanent sterility. There are two types of *ubat penjarang*. One is made out of a wild plant locally known as *Daun Tepus Calun* (the plant has been collected and sent for scientific identification and laboratory analysis). The plant is washed and then sun-dried for about two days. It is then cut into thin shreds and consumed either by chewing it with betel nut or drinking a concoction prepared by brewing the shredded leaves. To ensure effectiveness this contraceptive drug must be consumed by both the man and the woman. The other *ubat penjarang* is made from three wild roots of *pokok celaka, Tijoh lawang* and *Tijoh Penderah* (no scientific names available) which are cut into small pieces and randomly mixed together. The mixture is then brewed and the resulting concoction is drunk by both the man and the woman. Most of the study informants have faith in the efficiency of this contraceptive and rely on it for their family planning.

The *ubat pemutus* is supposed to be a permanent preventive measure for conception. Unlike the *ubat penjarang,* this medicine is made out of a particular single root. (This root is called *ubat pemutus* by the Negritos. As yet no scientific identification is available.) These may be eaten with betel leaves or boiled in water and drunk. According to the Rual Post Negritos, the *ubat pemutus,* like the *ubat penjarang,* must not be consumed during pregnancy as it is believed that it can kill the foetus and also endanger the pregnant woman's life. When asked whether or not the contraceptive was always effective the Rual Post Negritos answered that the contraceptives do work and that they have not heard of cases where the contraceptives failed to work.

The use of contraceptive drugs is not limited to the Rual Post Negritos. Paya Lebar Temuans also have traditional contraceptive drugs with the same alleged effects but these are used to a lesser extent. Like the Negritos, the Temuans recognize two types of contraceptive drugs, namely, *penjarang* and *penyambang.* However, instead of being shredded leaves of wild plants and wild roots, these medicines are mushrooms and are consumed with food. In order to be effective, both the man and the woman must consume these medicines. The *penjarang* is considered by the Temuans as a temporary preventive measure for conception whereas the *penyambang* is supposed to be a permanent preventive measure.

Neither the Temuans nor the Negritos employ modern contraceptives, such as condoms, diaphragms, spermicidal jellies, creams, and pills. In fact, most Negritos and Temuans are unaware of the existence of such contraceptives.

Summary

The fertility of the Negritos in the Rual Post area has increased in a span of two years probably because of the change in economic activities which through a chain reaction has changed the other factors in the fertility mechanism. With the introduction of the JOA-directed agricultural projects, the Rual Post Negritos are more settled and relatively more future-oriented. They also require more labor to work in the projects. Being settled, the Negritos are no longer faced with the heavy burden of transporting and suckling more than one baby at a time, a situation that existed when they were nomads. Furthermore,

the economic benefits, such as the food that the children who attend school bring home, have increased the economic value of children. The increase in the value and decrease in the cost of children has increased the fertility motivation of Negritos. The post-partum abstinence and other sexual abstinence is not as strictly observed now as it was in the past. There is a lesser use of contraceptives and abortifacients. Factors which once reduced fertility no longer operate. Subsequently, fertility has increased. The fertility difference between the Rual Post Negritos and Paya Lebar Temuans is probably due to the fact that the Rual Post Negritos have not completely changed their orientation from hunting and gathering to an agricultural orientation. This change takes some time to occur.

MORTALITY

Mortality is the outcome of circumstances involving some risk to life — specific illnesses, levels of general health and vigor, accidents, or even violence. It represents an important factor in population dynamics. Environmental factors greatly influence the variation in mortality rates.

The most common measure of the mortality experienced by a population is the crude death rate (CDR), the ratio of deaths for a specific period (usually one year) to the mid-point population (Barclay 1958). Based on the number of deaths (30 deaths) in Kg. Paya Lebar since 1957 and the mid-point population estimate (62 people in 1967), the CDR is about 24 deaths per 1000 population, as calculated on an annual basis. This is slightly lower than the Rual Post Negrito CDR, calculated as 32.6 deaths per 1000 population. The CDR has two important limitations. "It mixes together many population groups whose mortality varies widely whereas the major results of mortality study have come from examination of these components separately by means of more detailed analysis. Second, the CDR mixes these elements indiscriminately, in the form of an average, thereby giving greater weight to the mortality experience of groups that are larger and to all mortality experiences that are extremely high or extremely low" (Barclay 1958: 135).

Another method of showing mortality in the absence of a system of vital registration is to compare the survival rates of offsprings of women with completed fertility. The data on total number of livebirths per woman has already been presented in Table 7. Tables 11 and 12 show the number of surviving offsprings of these women. The difference in means, that is 2.45 surviving offsprings compared with 3.68 live-born offsprings per woman for the Negrito population and 3.25 surviving offsprings compared with 5.1 live-born offsprings per woman for the Temuan population, indicates the lower mortality of Rual Post Negritos compared to the Kg. Paya Lebar population (see Table 13).

Comparing the survival rates of offsprings of women with completed fertility as an indication of mortality also has disadvantages in that it represents the survival of offsprings to varying ages. An age-specific mortality indicator would be more valuable but due to the

TABLE 11
Surviving Offsprings of Rual Post Negrito Women Whose Reproduction Is Complete

		No. of Offsprings									
Mother	No.	0	1	2	3	4	5	6	7	8	$\bar{X}$
Alive (>40 years)	12	—	—	4	3	1	1	2	—	1	3.83
Dead (25-60 years)	30	—	9	16	4	1	—	—	—	—	1.90
TOTAL	42	—	9	20	7	2	1	2	—	1	2.45

TABLE 12
Surviving Offsprings of Paya Lebar Area Temuan Women Whose Reproduction Is Complete

Mother	No.	No. of Offsprings									$\bar{X}$
		0	1	2	3	4	5	6	7	8	
Alive (>40 years)	6	2	—	—	—	1	—	2	1	—	3.8
Dead (25-60 years)	10	1	3	2	2	1	1	—	—	—	2.2
TOTAL	16	3	3	2	2	2	1	2	1	—	3.25

TABLE 13
Comparisons Between the Number of Surviving Children of Women of Completed Fertility With the Total Live-born Children of Women of Completed Fertility, Rual Post Negritos and Paya Lebar Temuans

Total No. of Children	Rual Post Negritos	Paya Lebar Temuans
Live-born	3.68	5.10
Surviving	2.45	3.25
Dead	1.23	1.85

limited size of the Kg. Paya Lebar population, age-specific mortality rates were not computed nor could a life table model for Kg. Paya Lebar be constructed.

It is calculated from Tables 14 and 15 that 29 percent of the deaths in Rual Post and 60 percent of those in Paya Lebar occurred when the individuals were below 14 years. In Rual Post, 65 percent of these deaths were of males and 35 percent were of females. In Paya Lebar, 58 percent were males and 4 percent were females. In comparison with the Negritos, the Temuans have a higher child mortality. In both populations, child mortality is higher among males than females although this tendency is more pronounced among the Negritos. About 6.3 percent of the dead children in Rual Post and 33.7 percent of those in Paya Lebar died before reaching one year. About 20.5 percent of the dead in Rual Post and 14.5 percent in Paya Lebar were females in their reproductive periods, i.e., 15 to 44 years.

TABLE 14
Age at Death and Cause of Death, Kg. Paya Lebar (1927-1977)

Cause of Death	Below 1		1-14		15-44		45 & Above		Total	
	M	F	M	F	M	F	M	F	M	F
Disease	12	16	17	5	1	12	11	4	41	37
Killed by wild animals	—	—	—	—	1	—	—	—	1	—
Death during childbirth	—	—	—	—	—	4	—	—	—	4

TABLE 15
Age at Death and Cause of Death, Rual Post (1910-1978)

Cause of Death	Below 1		1-14		15-44		45 & Above		Total	
	M	F	M	F	M	F	M	F	M	F
Disease	6	2	18	11	18	26	24	17	66	56
Accident	—	—	—	—	3	—	1	—	4	—
Killed by wild animals	—	—	—	—	—	1	—	—	—	1

Causes of Death

Disease was the single most important cause of death among both the sedentary Temuan and the hunting and gathering Negrito populations. Ninety-six percent of the deaths in the Negrito population and 88 percent of those in the Temuan population were caused by some form of fatal ailment. Among the most common diseases found in the two communities were malaria, amoebic dysentery, diarrhoea, acute bronchitis, tuberculosis, cholera, and goiter. Most of these diseases are transmitted through physical contact or are carried by vectors such as the malaria mosquito *(anopheles minimus)*.

Demographic characteristics such as density, size, and extent of movement are important variables in the spread or containment of diseases. These characteristics have ecological attributes as they are different in a hunting and gathering population and a sedentary population. Among the hunters and gatherers, a low population density and group size restricts the spread of infectious diseases. The sedentary village with relatively higher population density allows disease pathogens to be disseminated more easily. In general the higher the population density the greater the chance that disease micro-organisms will make a succesful transfer from host to host. Therefore, infectious diseases should spread more successfully in the sedentary Paya Lebar population than the traditional nomadic Rual Post population. Nomadic populations, however, may also carry certain diseases over long distances. Presently, the situation has changed as the Rual Post Negritos are more or less settled.

In addition to population size, the arrangement of living space plays an important role in the spread or containment of disease. Thus, the type and arrangement of houses, the number of rooms per dwelling unit, and the number of occupants per room all contribute to epidemiological patterns. For example, the Vietnamese hill people who have built their houses on stilts eight to ten feet above the ground are able, to a certain extent, to protect themselves from the malaria mosquito as the flight ceiling of this mosquito is eight or nine feet, thus, placing the vector below the elevated houses of the hill dwellers. The Negritos traditionally stay in "lean-tos" which are arranged in a "beehive" formation. Each lean-to is normally occupied by one family. Presently, although the Negritos build houses, these are small and constructed close to one another. This type and arrangement of houses causes easy spread or containment of diseases in the Negrito population. Relatively speaking, the Paya Lebar Temuans build their houses some distance away from the next house. Furthermore, unlike the Negrito residence, the Paya Lebar Temuan house has, on the average, two rooms and the number of occupants per room is not large, averaging about three persons per room.

Population movement is another important variable. As mentioned earlier, a hunting and gathering economy necessitates movement which is an ecological strategy for efficient resource exploitation. Nomads tend to leave their waste products behind them, while sedentary people live in more or less constant contact with their own refuse. Careless

disposal of wastes can lead to easy breeding of disease micro-organisms. The sedentary Temuans dispose of their refuse at certain spots of the river which carries the refuse downstream. This contaminates the river and it is for this reason that the Temuans obtain their drinking water from either upstream or uncontaminated streams or tributaries. In contrast, the Rual Post Negritos, as a habit, scatter their refuse around their houses. This may seem practical to the nomads because long before the wastes have accumulated into enormous heaps in their camps, they would have moved to a new camp. Even now that the Rual Post Negritos are more or less settled, they still practice their traditional but unhygienic habits of waste disposal.

This manner of waste disposal may possibly have been the reason for the increase in the number of deaths caused by diseases from 8 (April 1974 to April 1976) to 12 (April 1976 to April 1978). The deaths from December 1974 to April 1978, of which 86 percent were caused by fatal diseases, can be explained in the light of the above discussion.

MIGRATION

In a broad sense, migration is a relatively permanent movement of an individual or a group over a significant distance. The key terms "permanent movement" and "significant distance" are defined in many ways depending on arbitrarily chosen criteria. Although the significance of a distance is usually measured geographically, it can also be determined by social criteria. In this study, a person was considered a migrant if he had transferred from his usual residence to another village during a 12-month period, renounced his "sense of belongingness" to his former village, and established a "sense of belongingness" to his new village. Migration must be distinguished from population mobility which is discussed in a later section. Movements that involve only a temporary change of residence are generally considered non-migratory. These include nomadism and seasonal movements which is practiced by sedentary Temuans who make trips into the forests for at least a week to collect rattan and seasonal wild fruit.

Migration is stated to have some profound demographic effects on the sending as well as the receiving populations. First of all the migrants reduce the population of the area they leave and increase the population of the area they enter. Secondly, their departure may alter the fertility and mortality patterns of both sending and receiving populations as there is always age selectivity in migration.

Information on the patterns of migration in the two villages studied was deduced from birthplace records, migration histories, and genealogies.

Little accurate information is available on the Rual Post migration patterns for a number of reasons. First of all, it was not possible to draw out detailed genealogies of the Rual Post Negritos as, like the Semai (Fix 1977: 30), there is a tendency among the Negritos "to lump distant kinsmen together." Secondly, migration histories were difficult to obtain as the Negritos, being nomadic in the recent past, wandered frequently. However, some idea of the Negrito migration patterns can be deduced from the marriage patterns. There were 27 band exogamous marriages which means 27 Negritos have changed their usual residence.

There was no occurrence of permanent either in or out migration in the Rual Post area in the span of the last two years (1976 to 1978). As was mentioned earlier on, Rual Post is a resettlement village. Aborigines residing close to Rual Post were persuaded to leave their home areas and set up new homes in Rual Post. This can be viewed as mass migration initiated by the JOA. Table 16 shows a list of the Rual Post Negritos' places of origin.

In Paya Lebar there was a total of 11 in-migrants, 12.8 percent of the total Paya Lebar Temuan population, and 14 out-migrants.

Causes of Migration

A number of "push" and "pull" factors motivate a person or group to migrate. The

TABLE 16
Rual Post Negritos' Places of Orgin

Place of Origin	No.	%
Lubuk Bongor	22	14.9
Pasir Dusun	29	19.6
Wias	3	2.0
Sg. Riyunit Valley	25	16.9
Sg. Long Valley	47	31.8
Sg. Seletar Valley	22	14.9

"push" consists of the existing situation at home that motivates a person or group to migrate and the "pull" is the attractive qualities of the place of destination that attracts the migrants. The "push" and "pull" factors of migration in the two populations may be considered under the following categories: ecological factors, demographic factors, and social and cultural factors.

Ecological factors

Ecological "push" is particularly intense when there is disparity between the produce of land and subsistence requirements. This may be caused either by depletion of resources, or by the growing pressure of population on resources. The abundant availability of resources at another place becomes the "pull" factor of migration. There is neither any permanent disparity between the produce of land and subsistence requirements nor permanent depletion of resources in Rual Post and Paya Lebar areas. As such there is no out-migration caused by this factor in the two populations. However, in the event of temporary depletion of resources, some Negritos and Temuans may indulge in short-term movements to look for resources but they return to the home village after they have satisfied their needs or demands.

The ecological "push" is also intense when there is intra-specific competition, as in competition with outsiders like the Malays for the same resources, usually food or land. Populations do not exist as isolated entities relating only to their physical environment, but also interact extensively and continuously with one another. In ecological terms, these interactions can either be competition, coexistence, or symbiosis. Competition can be overcome by competitive exclusion where one competitor survives at the expense of the other, and niche diversification, like the utilization of different food resources of the habitat by the coexisting species. When there is interdependence between two populations, it is termed ecologically as a symbiotic relationship. For example, the trading relationship of the *orang asli* and the Malay *kampung* can be considered a symbiotic relationship as the *orang asli* is dependent on the Malay traders for canned food and other essentials, and the Malay traders are similarly dependent on the *orang asli* for forest products.

In this study, competition for land resulting in conflicts and territorial disputes is an ecological factor that motivates out-migration from the villages. The resulting migration can be treated more or less as niche diversification that is caused by intraspecific competition. In this case, however, it is a change of usual residence which overcomes this competition from outside.

The Rual Post Negritos are not faced with such ecological pressure as they have been allotted a large plot of land with officially recognized land rights. One *penghulu,* however, claimed that some Malays have used some of his land for agricultural and gardening purposes. But this has only caused him to complain to the authorities and not to migrate.

The opposite situation exists in Kg. Paya Lebar. The continuing migration of Malays from Sumatra and Java into the Ulu Regions of Selangor has led to frequent territorial disputes with the Temuans. The pressure that resulted from these disputes over land and resources has caused Temuans to migrate and, in most cases, whole villages have moved away from the newly settled migrant Malays. Some informants talked of how Temuans in villages like Kg. Gabai in Ulu Langat have migrated into other villages after they were pressured by the Malays for land. In fact, the pioneer Temuan settlers at Kg. Paya Lebar were migrants from other nearby villages that were threatened by the march of the migrant Malays into their village land-holdings. During the period of study, some Malays caused trouble after their demand for some land owned by the Temuans was rejected. Fear of more serious trouble caused one couple to leave Paya Lebar for another village.

Ecological "pull" factors also motivate individuals and groups to migrate. This factor depends on the aspirational status of the people. The "attractiveness" of other areas have not pulled Rual Post Negritos away from the home area for long periods, however, as the following section on mobility will show. However, the Rual Post Negritos have indulged in temporary movements because of the "attractive" qualities of other areas as compared to the temporary lack of attractiveness of their home area.

Unlike urban in-migrants from rural places of origin who are lured by "city lights," the Temuan youngsters at Kg. Paya Lebar have not been attracted by job opportunities in towns, although they do have goals that are somewhat economic in character. There was only one out-migrant in Paya Lebar who was motivated by economic opportunities elsewhere.

Demographic factors

Migration has been one of the great demographic and social adjustive procedures throughout the history of mankind. The intensity of Malthusian pressure on land due to increase in population may lead to out-migration to places experiencing lesser pressure. Demographic factors, however, may indirectly motivate migration. Firstly, if there are few females of marriageable age, males will have to seek wives elsewhere, thus increasing the probability of the males' settling in other villages. Secondly, since migration is selective, the earlier out-migration of young males may leave females of marriageable age in the home village still single. Eventually these females will out-migrate when they marry males from other villages, who may take their brides to their home village (i.e., only if the society is patrilocal).

Findings of this study show that there were out-migrants in both Rual Post Negrito and Paya Lebar Temuan populations motivated by demographic factors.

Socio-cultural and political factors

Three important causes of migration that can be categorized under this section are JOA's directive to migrate, marriage, and religious factors.

The JOA's directive to migrate is particularly the cause for the mass migration of the Rual Post Negritos from their home areas to the Rual Post Resettlement area in 1972. There are also a number of other cases of this kind of migration such as the resettlement of Temuans at Douglas and the Ulu Langat to another area, as the home area of these groups was located close to a dam project under construction.

Marriage mostly involves the migration of individuals. Young Temuan boys normally visit other Temuan villages in search of prospective wives. Most Temuans settle in a different village as a result of marriage with a member of that village. As mentioned earlier, about 53 percent of the current marriages at Kg. Paya Lebar were exogamous marriages, i.e., one of the spouses came from another village. This regular mate exchange with other Temuan villages has caused a considerable amount of migration. All the in-migrants (11 or 12.8 percent of the Paya Lebar population) settled in Kg.

Paya Lebar because of marriage and 13 of the 16 out-migrants have settled elsewhere because of marriage. In the recent past, when each band occupied its own territory, there were a number of mate exchanges among the bands, as they are generally exogamous. Since the Negritos in general practice patrilocality, there is normally movement of newly wed Negrito females from their home area to that of their husbands'.

POPULATION GROWTH

Population growth is a change in the size of population, whether it be an increase or a decrease. It is the balance of births, deaths, in-migration, and emigration. If P_1 is the population of a given area at an early time (t_1), and P_2 the population at a later time (t_2), then:

$$P_2 = P_1 + (B - D) + (i - e)$$

where B is the births, D is the deaths, i the in-migration, and e the emigration of the area between t_1 and t_2.

In the span of two years (1976 to 1978), the Rual Post Negrito population experienced 27 births, 18 deaths, and no migration. The Rual Post population in April 1976 consisted of 184 people, and the April 1978 census reported 193 people, an increase of nine people which is concomitant with the result of the "B – D" (27 births – 18 deaths) computation. This gives an average rate of 2.39 percent population increase per annum. In a prior analysis of the 1976 data, Gomes (1976) found that the average rate of population increase was 1.25 percent per annum. This was based on the population increase (20 percent) in a span of ten years, 1966 to 1976. It may be concluded that there has been a considerable growth in the Negrito population caused by an increase in the number of births.

Similarly, the Paya Lebar Temuan population also experienced a population increase of 1.16 percent from March 1977 to March 1978. This population increase was due to three births and zero deaths, but the migration of one married couple who left the village because of threats from neighboring Malays offset this increase. A retrospective analysis of the Paya Lebar Temuan population for the past 20 years reveals considerable fluctuations in the growth rate. From 1957 to 1967, the population increased by ten, an increase of 19 percent or 1.9 percent per annum. This rate soared higher within the years 1968 to 1978, to 3.8 percent per annum or an increase of 24 or 38 percent.

CONCLUSION

In this study, an attempt has been made to show the relationship between demographic aspects of two different *orang asli* groups and their environmental adaptations. The study generally has revealed that the population structure and dynamics differ considerably between the hunting and gathering Negrito group and the sedentary Temuan group. It is argued that these demographic differences reflect the nature of the two groups' environmental adaptations.

A number of social scientists believe that population dynamics differ among societies with different economic characteristics. Fertility is strongly believed to be affected by the value and cost of children which is, in turn, said to reflect the children's economic attributes. On the basis of comparative data on economic activity rates obtained from national censuses and surveys, Nag (1976) has made some tentative statements regarding the differential value of children in societies with different economic bases. These statements are as follows:

1. The economic value of children to their families is higher in agricultural societies than in industrial societies.
2. The economic value of children tends to decline with modernization.

3. The economic value of children is likely to be greater in agricultural societies where planting and harvesting are tied to the monsoon rains and when the extra demand for agricultural labor may not be completely met by adults.
4. The economic value of children in farming households is likely to exceed that of children in non-farming households.

According to Nag, therefore, the value of children varies in societies with different ecological adaptations. His fourth statement, if slightly amended, would mean that the economic value of children is higher in a sedentary agricultural society than in a nomadic hunting and gathering society. This study has shown that the economic value of children is higher among the sedentary agriculturalist Paya Lebar Temuans than the nomadic hunting and gathering Rual Post Negritos. Among the latter a low economic value and high cost of children has induced the regulation of births. This is done through the use of certain social means such as a prolonged post-partum abstinence, abortion, traditional contraceptive drugs, and abstinence from sexual intercourse. A low birth level tends to keep the population stable at densities below the point of resource exhaustion.

Lee (1972) noted that long-term population growth among nomadic Bushmen appeared to be only 0.5 percent a year, and the birth interval between living children was about four years. He speculated that the added burden of carrying more than one toddler on gathering trips was enough to discourage women from bearing a child before the previous one could walk. He observed that once the Bushmen shifted to a sedentary life, one that was partially dependent on agriculture and dairying, the birth interval declined by 30 percent.

The situation among the Bushmen appears to be very similar to the Rual Post Negrito population patterns. Prior to adopting a settled, agricultural way of life, population growth among the Rual Post Negritos was an average of 1.25 percent per annum. However, subsequent to adopting a sedentary lifestyle, the growth rate soared to 2.39 percent. This increased growth rate is entirely caused by the increased birth rate. It is likely that the birth rate has increased because of the change from a nomadic hunting and gathering lifestyle to a sedentary one.

Fertility is not the only factor that affects population growth patterns. There is also the mortality factor. This study has shown that environmental factors greatly influence the variation in mortality rates. The mortality patterns in the two populations studied differ significantly. If the standard demographic measure, the crude death rate, is used, the difference is concealed in the existing statistical errors arising from under- or over-estimation or misreporting of deaths. The other method, comparisons between the survival rates of offsprings of women of completed fertility with the total number of livebirths per woman, shows that the mortality is higher among the Temuans than the Negritos (Table 13).

Relatively more live-born Negrito children survive than live-born Temuan children. The higher mortality among the Temuans tends to reduce their population growth rate which would have been much higher if more children had survived.

Disease is the single most important cause of death in the two populations studied. The different nature of diseases is influenced by demographic characteristics such as density, size, and extent of movement. Perhaps the sedentary agricultural Paya Lebar Temuan settlement with its relatively higher population density allows disease pathogens to be spread more easily. It is speculated that the Negritos' unhealthy living conditions (overcrowded houses built close to one another, unhygienic scattering of wastes around dwellings, and contaminated river-water) has caused a number of them to fall ill and eventually die.

The findings of the study have shown that population dynamics differ in societies or groups with different environmental adaptations. The evidence confirms the belief that a hunting and gathering society needs to maintain its population at densities below the point

of resource exhaustion. As such it will employ certain social means to regulate birth since this appears to be the only practical way of population control. Though this evidence is based on small populations and as such may be greatly influenced by statistical errors, it is still important as it provides some idea of the relationship between population dynamics and ecological adaptation.

The intriguing results of this study points to the need for more investigations in this area in order to provide a better understanding of the relationship between demography and ecological adaptation.

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APPENDICES

Appendix A

THE SOUTHEAST ASIAN POPULATION RESEARCH AWARD PROGRAM: A MIDTERM EVALUATION

*Gerard Rixhon**

This report is the result of a two-month evaluation (14 April to 14 June 1977) of the Southeast Asian Population Research Award Program (SEAPRAP), a joint program of the International Development Research Center (IDRC) and the Ford Foundation. It is organized around three major points: SEAPRAP's objectives, SEAPRAP mechanisms, and suggestions and conclusions. Suggestions for the improvement of the present Program are made wherever appropriate within the text of the first and second points.

SEAPRAP is governed by a Program Committee composed of five Southeast Asian social scientists representing each one of the five ASEAN countries. Their functions are to formulate the program policies, evaluate its progress, screen, select, and judge applications, allocate the funds available to the awardees, and provide technical assistance to them when needed. Added to these are also the functions of providing contacts and publicity in their own country.

Implementing all these and administering the Program as its executive officer is the Project Coordinator, Dr Pedro V. Flores, who also doubles presently as the IDRC Regional Education Officer.

SEAPRAP'S OBJECTIVES

SEAPRAP's three objectives were outlined and approved by the Program Committee (at the time called "Consultants' Group") on 21-23 May 1974. The initial discussion for this had been started much earlier in 1972-1973 by Lyle Saunders, John Friesen, and Ozzie Simmons, the "godfathers" of the Program. They selected the five Southeast Asian social scientists who in turn, very conscientiously, came prepared to the meeting where the objectives were arrived at. Before these objectives are looked into one by one, it should be entered into the record that this was the beginning of a Southeast Asian undertaking and collaboration that still prove to be very fruitful not only on the part of the Committee members but also of the representatives of the donor agencies. It is to the credit of all concerned that workable and far-reaching objectives were arrived at.

The First Objective

This objective is to strengthen the research capabilities of young Asian social scientists and to provide them with the necessary financial and technical support. It is one that elicits a unanimous vote of confidence in the Program. In fact, all interviewees, without any single exception, are agreed that this objective makes SEAPRAP unique in the region and, hence, a worthwhile program. As pointed out by the respondents, there is no other award program that technically and financially assists young inexperienced Southeast Asian social science researchers. All other institutions operating at the regional

*Gerard Rixhon was a consultant for Ford Foundation at the time of this report. He undertook this midterm evaluation of SEAPRAP at the request of IDRC.

level make their awards to senior researchers and to middle-level ones who have begun making a name for themselves. Only SEAPRAP dares take the "gamble" (as one respondent puts it) to seek out solely the "junior" level researchers in order to give them the competence and confidence needed to launch them solidly on a research career.

It is interesting to note in this respect that out of the 53 awardees (as of 31 December 1976), all except three (This is as far as I know. The Coordinator's evaluation will show the exact figure. Three out of 53 means a 5.7 percent of failures.) have remained in the population field (research and/or training) and/or are pursuing graduate studies in this field, an excellent average of 94.3 percent. The three who so far have given up a research career did so for personal reasons such as marriage (abroad), religious commitment with station abroad (possibly not a permanent one), and moving onto a better remunerating job outside of social science research (but still involved in part-time teaching). The fact that several of the awardees who have completed their SEAPRAP awards and following it have been given a promotion to a higher post in their own institution is an encouraging sign, too.

Permanence, graduate training, and promotion are better gauges of the success of the Program than the awardees' own perceptions (naturally biased in favor of the Program). Yet, beyond the latter which I may call a "self-serving" perception of SEAPRAP, there is an unquantifiable element which should be mentioned, even at the risk of being branded "impressionistic." This is the lively, enthusiastic interest in good research manifested through various subtle ways by the awardees, unsuccessful applicants (with one exception in Thailand), and hopeful applicants. This interest manifested itself in the tone and climate of the conversations and meetings held here and there. This was expressed more formally by one Filipina who admitted that she had been a research assistant for years, handling coding work, project after project; her award made it possible for her "to find out that there was a future in research" as she thus got her chance of handling a research project from A to Z. In this, she voiced what was subtly manifested by many others — that SEAPRAP had afforded junior researchers a chance to beef up the slowly growing ranks of qualified researchers. Dr Flores, I think, will second me on this as his visits must have given him, too, a glimpse of the great expectations for research professionalism which SEAPRAP has helped develop in the region along with other research development, i.e., research stations in Indonesia, better training in academic institutions, and more opportunities for graduate training.

In order to assess this objective further, it is necessary to examine it in relation to several requirements of the program and to the skills gained by the awardees. The following will then be considered successively:

1. academic background of the awardees;
2. extent of their research experience;
3. age limit;
4. letters of recommendation (with emphasis on the applicants' qualifications and commitment to research);
5. geographic spread; and
6. a brief assessment of the awardees' skills gain.

Academic background of the awardees

The quality of the academic background of the awardees varies greatly from country to country in the region and within each country between the top metropolitan universities and the provincial institutions. Another level of quality is also obtained for the graduates or graduate students of foreign universities. This naturally is reflected in the uneven quality of the applications. Although not a major determining factor in the awards' selection, the academic background is looked into as an indicator of a basic minimum of research qualifications or expertise in one of the social sciences and of a general

intellectual ability. Unfortunately, the information received in the applications is often very meager.

In order to gather more information about the professional preparedness of the applicants, it might be wise for the Committee to look into the type of courses the applicants have taken such as statistics, research methodology, etc. The transcript of records of the applicant would be the source for this. In the case of research assistants who have received on-the-job training, a certification and evaluation of their research ability from the director of their research institute would help. This is important particularly in the case of applicants who come from provincial universities or colleges in Indonesia and the Philippines where there is much to desire in research training. This would also help in determining the type of technical assistance needed in the event a good proponent deserves an award.

Extent of research experience

Generally, the graduate students from the better local and foreign universities go into the field with at least a relatively good theoretical and methodological background. They are usually supervised closely by an institutional adviser and there does not seem to be much of a problem even if they lack actual research experience. The applicants who come from the better established research institutions such as the University of the Philippines Population Institute (UPPI), Research Institute for Mindanao Culture (RIMCU), San Carlos University, and Silliman University in the Philippines, Chulalongkorn University and Mahidol University in Thailand, Lembaga Demografi at University of Indonesia and Gadjah Mada University in Indonesia, usually have enough research experience and available expert backing. They present no serious difficulties.

The problem comes with applicants having had only minimal research experience in the past, at the most as interviewers, enumerators, or coders. Generally, their lack of research experience, especially in Indonesia, is shown in the lack of conceptualization and knowledge of research design (including a very weak methodology). Usually if the applicant shows some promise as a professional researcher, he/she is assigned an adviser by the Committee. This practice has been in effect rewarding for the recipient. However, two young Indonesian researchers (Banda Aceh) have candidly suggested that, although the award has helped them, the process was so painfully slow that the award should have been made to them only after they had already gained some satisfactory research experience. Since their awards are still ongoing, it is difficult to assess their statements as these might have covered a (possibly wrong) perception of their capabilities and/or of their work. Whatever, at this stage of their research, they reported a lack of confidence in themselves, and their remarks should be considered as a problem which, though not widespread, might recur. In examining new proposals of poorly trained applicants from provincial areas or government agencies, more information will be needed from an impartial referee concerning: (1) the applicant's level of past involvement in research work; (2) the capability of the applicant to work closely with and learn from an adviser; and (3) the applicant's resourcefulness and confidence (usually subsumed under "maturity").

Age limit

Since the Program is designed for young researchers the age limit of the applicants was set at about age 35. It is only in the last two rounds of awards that this rule was strictly enforced. This rule clearly now spells out the objective as set ("young researchers") and serves as a convenient cut-off point as well whenever there is a large number of applicants.

The majority of interviewed administrators of academic research institutions concur with most of the awardees and resource persons in their support for this age limit.

However, a few, two administrators in Thailand and three in Indonesia, find this rule unrealistic due to their bureaucratic systems where seniority still plays a prevalent role. They claim that in their institutions, the research personnel cannot expect to direct their own project until later in life after they have moved up the bureaucratic ladder. Junior staff members have to give way to their seniors. They suggest that the age limit be moved up to at least 40. Clearly a minority voice, it should nevertheless be brought to the attention of the Committee for their information. If the Program rightly seeks a multiplier effect, it should continue to favor the younger applicants with a long future ahead of them and age 35 should be kept as the age limit.

Since the brochure is silent about the age limit, I suggest that a word be said about it to avoid giving false hopes and economize on work and energy.

Letters of recommendation (applicants' qualifications and commitment)

This item was discussed only with several advisers. In a few cases (in Indonesia and the Philippines), it has been noted that some of the recommendation letters came from friends of the applicants or from administrators with very little knowledge of their necessary research qualifications.

At times some administrators feel obliged to write favorable comments either because of social pressures or for fear (unfounded in SEAPRAP's case) that negative comments would find their way back to the applicant. In fact, it is not unusual in some places (Philippines and Indonesia) for a Dean or Department Head to show the recommendation letter (or a copy) to the applicant directly or through the secretary (it enhances his power and keeps his people happy). This practice is on the wane, but it still is not uncommon. Although this is not much of a problem in the case of bad applications, in borderline cases such an "irresponsible" letter might badly affect the Committee's decision.

Two aspects of the letters of recommendation are very crucial in this regard:

1. the applicant's qualifications to do research in population problems; and
2. the promise of professional success (which also implies the assurance of the applicant's commitment to population research/teaching in the foreseeable future).

Both are extremely important and are usually looked into carefully. It is suggested that in the event of a possible marginal case coming up with possibly biased letter(s) of recommendation, the Coordinator seeks the opinion of an impartial and knowledgeable referee from the present network of resource persons and advisers SEAPRAP has in the specific country of the applicant.

The question of the applicant's qualifications for research in *population* problems — if this is the case — has to be looked into more carefully if the applicant does not have any background in this specialization (in the case of economists, political scientists, and anthropologists among others). Five resource persons (in Singapore, the Philippines, and Malaysia) pointed out that they knew several applicants who had bent their proposals to fit this requirement of the program although their background and interests did not lie in that direction. But one reliable adviser also admitted that one specific applicant, his student, was such a case and that he nevertheless knew the applicant's capabilities. The granting of the award did not prove him right as it further developed his protegee's nascent interest in population work.

It is also suggested that the poor quality of some of the reports thus far published might be the result of this lack of preparedness for population research. The danger remains as long as the program's focus is perceived in narrow demographic terms by some of the applicants. What scares me most in this is that several young hopeful researchers are so keen in a research career without any positive interest in population research that they

might bend their integrity as social scientists just to obtain the funds, then drop population "interest" as soon as the report is finished. Yet one cannot discount the possibility hinted at earlier that an award might also be the push an awardee is looking to develop a career in population research. In both cases, the applicant's character is the key to this development. An impartial referee who knows the applicant and who is sought by the Coordinator independently from the applicant's choice should be confidentially queried on the matter.

The question of commitment to a professional career ("promise of professional success") in their native country should continue to be carefully examined especially in the cases of M.A. and Ph.D. candidates (both in local and foreign universities). The basic lure for a degree or the attraction for a good remunerating job locally (outside of research) or abroad are facts of life in the region. There is internal brain drain as well as the international one where graduates leave the local field of research for "greener" pastures abroad or in non-social science ventures. To assist in the development of local research capabilities, the Program Committee is concerned about this problem. In this outside assistance is sought. The university adviser may or may not be of help (the latter is probably more true with foreign university advisers), but again someone in SEAPRAP's network of resource persons in the applicant's country could be tapped by the Coordinator to shed light on the (student) applicant's future as a researcher locally and his commitment. In all these cases, as in the past, the local Committee member can assist the Coordinator.

To gauge commitment is very difficult because of its personal nature. There is a good number of awardees who have had an institutional base for years and they appear secure in it. An award usually anchors them further in a research career and its successful completion is more often than not a factor in receiving a promotion or in obtaining a raise in salary. That one may drop out of the population research or teaching circuit cannot always be detected at selection time.

In this connection, it is appropriate to discuss the three known (so far) cases of failure from Malang, Indonesia, Thailand, and the Philippines. After the completion of his award, the first case continued for a while, until this year, to do research and teach at the Malang (UnBra) Lembaga Demografi. But for financial reasons, he recently took on a consultant job as accountant with a plywood firm in Surabaya. Since then, he has ceased being active at the Institute. He comes to Malang only on Saturdays to teach an accountancy course. He is then lost to population studies, at least for the time being and the foreseeable future. The other case is that of an awardee from Thailand whose report is not completely finished and who left for the United States to join her husband. The third failure, an awardee from the Philippines who, after getting her M.A. in Demography at the University of the Philippines' Population Institute, moved to De La Salle University for a while as a researcher. A member of an Italian-based religious lay institute, Foccolare, she decided to leave for Rome for further religious training, apparently (according to Dr Mercedes Concepcion) giving up a research career. In these three cases, there was no hint at the time of selection that this would happen. This also indicates the difficulty of assessing properly the applicant's firm commitment to research and underlines the necessity of carefully investigating this factor before an award is made. The many SEAPRAP advisers and resource persons interviewed throughout the region strongly encourage the Program Committee and the Coordinator to continue looking carefully into this factor of research commitment and offer their help whenever appropriate.

A minor problem has arisen in an early round of awards which should be mentioned here. It is that of a proposal being "pirated" from another research without the original author's previous knowledge. To forestall the likely recurrence of such dishonesty, an independent referee with a good knowledge of the local research situation should be

sought. It might not be a bad idea to notify the local institutions of the proposals received with titles and names asking them to post publicly this information.

It has also happened in the past that a senior researcher submitted a proposal which was returned because he was either over-qualified or over-aged. It was suggested to him that he modify the proposal in such a way that a young assistant become the main proponent and the senior researcher revert to an adviser status. This might be fine if the young assistant was already involved in the elaboration of the first proposal. Yet the danger is that the young researcher might remain completely in the shadow of the senior man, making it difficult for the new proponent to develop the confidence necessary to establish himself as a competent researcher, as the project is not really "his own." The situation may vary from case to case, but great caution should be exercised in examining the letter of recommendation sent by the adviser and an independent opinion should be sought from a reliable referee who knows the local situation.

Geographical spread

As stated in the prospectus the Program invites applications from nationals from the five ASEAN countries, Burma, the Khmer Republic, Laos, and Vietnam. One award was made to a Vietnamese researcher in the first round but was not activated. Because of political events or restrictions, the Program has so far dealt only with the five ASEAN countries, with the hope that the climate for research in the other countries might improve in the future.

The SEAPRAP Committee has wisely decided that the spread of awards should extend geographically to the major areas of each of the five ASEAN countries and to the provincial areas where new research institutions are badly in need of trained researchers, as much as possible outside the metropolitan cities. It should be added, nevertheless, that the proposals' quality and the applicants' qualifications were always ascertained before the geographical location of the proponent and the research needs of his area were looked into.

As a country Indonesia has the best geographical spread of SEAPRAP awards which extends from Banda Aceh in North Sumatra to Jayapura in Irian Jaya (after the recent round of awards: in 17 provincial centers). This ideal spread is due to the multiplicity of educational and research state institutions through the breadth and the length of Indonesia. It is also due, in my own view, to Dr Iskandar's toils in training a good number of junior demographers (now scattered throughout the country and located at many new Institutes of Demography in most universities) and to the three research stations (two supported by the Ford Foundation and one by IDRC) which draw trainees from provincial areas. Through all these institutions, information on SEAPRAP was easily available to interested researchers.

In the cases of the Philippines, Thailand, and Malaysia, there is a much larger concentration of awardees in the metropolitan cities where most of the population research institutions are located. So it is expected that the better applicants would come from them. This also explains why no applications have come from East Malaysia and Brunei and why only a few, in the Philippines, have come from northern and southern Luzon, Panay and Leyte, and some areas of Mindanao, where a good number of small universities are located. In Thailand, there does not seem to be much yet outside of Bangkok, Chiang Mai, and Songkhla.

Singapore has only two awardees. The number seems about right. Nevertheless one is surprised at finding hardly any applicants from the city state — despite the quality (for the region) of social science institutions there. Reasons advanced in the interviews are: the availability of local funds for population research from various sources, the shying away from research opportunities coupled with the rush to graduate made more urgent by two years of military service (faculty members gave this as the reason for their

difficulty in getting senior students to assist them in research projects where usually such students would be attracted to research and possibly a research career), and finally the poor dissemination of information on SEAPRAP (passed on only to a few).

Looking at this geographical spread, a remark originating from Indonesia has to be made: most of the Indonesian awardees located in the provinces find themselves isolated and often insulated. In a sense, this is another gap, though of a different nature, which raises the question of a follow-up aspect of the Program of which more follows.

No quota per country was ever set and most respondents wish that it remains this way with the quality of the proposals and the promise of professional success as the basic criteria. A few in Indonesia would want more awards going to their own country on the basis of population size and greater needs, but they are satisfied with the present number of awards to Indonesians and they gamely accept the overarching importance of quality over quantity.

At the end of the eighth round in May 1978, there should be at most some 90 awards divided among the five countries. Out of this number a maximum of 30 will possibly go to Indonesia, a possible three or more to Singapore; the rest, or about 56, will be divided among Malaysia, Thailand, and the Philippines. Looking at the needs of these countries in terms of developing research capabilities, the estimated number of awards (by May 1978) indicates to me that geographically SEAPRAP has made a good start, but a start only. More could still be done through an extension of the Program for three to four more years, if only to strengthen what has been initiated. In this connection, the remarks from Indonesia on the isolation and insulation just mentioned are pertinent.

At this time in history, it is difficult to say anything about the future of the Program in the cases of Burma, Laos, the Khmer Republic, and Vietnam, but there is the possibility that Burma might open up to research ventures faster than the other three countries. It is recommended that contacts be established with Burmese universities for disseminating information on SEAPRAP. As for the other countries, I am afraid not much can be done presently except wait for happier developments concerning research.

Skills gained by the awardees

To assess the gain of skills acquired through an award would demand much time as this means the examination of each awardee's proposal file, reports, and past and present performances. In my case, there was simply no time for this as my job was to conduct numerous interviews throughout the five ASEAN countries. Perforce this assessment relies on comments made by the awardees and more heavily on those made by the advisers. The comments were uneven. On the one hand there were candid comments such as those from the Aceh awardees mentioned above. Twenty awardees claim having become more secure and more professional in their research work. On the other hand, it was difficult to get anything more substantial from the rest (15) than a statement of "having benefited much from the program." In five of these cases (three in Kuala Lumpur and two in Bangkok) I was certainly more to blame in not getting better information because of the little time I had with them. Nevertheless, the picture that emerges from this aspect of my interviews is mostly contributed by the advisers' comments. This should be more empirically supported by Dr Flores' own evaluation based on the analysis of the awardees' records and questionnaires.

In general, there is real satisfaction in the fact that the awards have enabled the recipients to learn the ropes of research at all its stages, especially in the area of research design, the painstaking work for a tighter methodology, data organization and analysis, and report writing.

For those involved in fieldwork (the majority of awardees), most of them from the middle class, there has also been a rewarding exposure to the poorer people (urban or rural) with their own specific problems. In this regard, 26 awardees have been exposed in

varying degrees to rural and, in rare cases, urban poor, an exposure which has made them aware of the necessity for better communication skills with their respondents by shifting away from a somewhat technical or academic vocabulary to a more simple and better understood one. This awareness is a necessary step for better communication skills and for better research, and that the awardees have moved to both is a credit to them and to the Program.

Since in the area of the awardees' professional growth the results vary according to their training background it is best in this report to separate them accordingly:

1. the awardees located in provincial institutions and without any sophisticated research training, and
2. those with a Ph.D./M.A. degree or completing the research needed for their dissertation/thesis with a more sophisticated academic/research background.

Based on my interviews and observations, the first category of awardees is where there has been an interesting — if not dramatic and not always apparent — gain in research skills. This goes generally across the board but is more evident in the learning process which has been going on among the majority of them, especially in the areas of learning how to work satisfactorily with and learn from an appointed adviser, write an acceptable research proposal, painstakingly go through a better conceptualization process (apparently the more difficult work for most in this category because they are academically ill-prepared for it), tighten up a working methodology, and particularly refine their instruments. These are the areas most notable in skill learning in this group. Fieldwork — except for some communication problems briefly discussed above — has not been much of a problem. In a few instances, there have been some problems of data organization but the advisers' assistance has helped. Data analysis seems to have been weak in more cases and report writing is reported to be a hurdle for some. Some admittedly could have done better in the latter area. Two awardees are described as disappointing for not consulting satisfactorily with their advisers in the last stages of analysis and report writing. The awardees' increase in research skills was more evident up to the fieldwork phase and seems to have petered out at the end, although they claimed that they had learned a lot in the last phase of the project.

The more satisfactory progress in research proficiency in this category is evident among the awardees who are attached to the better research institutions such as in Thailand, the Philippines, and Universitas Indonesia. But in the provincial Indonesian institutions where professional resources are very meager (in some cases, nil), the increase in skills, though not dramatic at all, is no less real. Compared to professionally better-off awardees, it is at the best a modest gain. But (I should hasten to say) seen within the context of the relatively poor academic environment in which they live, there is an undeniable, real gain in research skills. The reader should be reminded that the training in statistics and research methodology is, in some of the provincial institutions in Indonesia and the Philippines (though less so), inadequate. So are their libraries. The research training stations in Aceh and Ujung Pandang in Indonesia have improved training in research methodology, but up to now have no training in quantitative techniques. The coming of SEAPRAP awards has made possible the learning of these skills through the assignment of an adviser. This state of affairs is fortunately remedied through an effort at improving this training at the local institutional level in Indonesia because of the desire to come up to SEAPRAP's requirements. This should be recognized as one of the Program's multiplier effects.

The second category of awardees, those with a high degree and those working for a degree thesis, covers "debutant" researchers who are better prepared professionally than their peers in the first category. The awardees doing research for their thesis have a thesis adviser who follows them up more closely than the awardees in the first group. Thus, higher standards of research are expected and more sophisticated skills sought from

awardees in this category. In general, the picture looks very good if varied from case to case, again depending on the professional or academic background of the individuals. For instance, better work and higher sophistication in research skills are obtained in the case of awardees with a Ph.D. from abroad as in the cases of Dr Fong and Dr Penporn among others, than, say the work of awardees with a good local M.A. degree. The results, at this level, are also on par with the awardees' background. But at both of these levels (foreign and local trained grantees), the results are very good. Admittedly their progress has been so at all the levels of the research process. However, this is not always reflected in their final reports. Despite this, the overall evaluation of this category warrants a high mark.

I have attempted to summarize somewhat conservatively the progress of research skills obtained through SEAPRAP, looking at it from three levels and lumping together the awardees from the two categories (see Table 1). Although this is admittedly more impressionistic than mathematical, it attempts to give a realistic picture of what has been accomplished by SEAPRAP. This is furthermore done within the context of SEAPRAP's first objective, whose target is the region. Although the Program seeks to eventually bring Southeast Asian social researchers to the level of international social science research, this is not its proximate aim. To judge the awardees' progress according to international standards would be both unrealistic and unfair to the Program and awardees. Nevertheless, I should add that a few awardees in Malaysia and Thailand are already approaching this goal very fast. What SEAPRAP is certainly doing is providing the technical and financial support needed to bring young Southeast Asian researchers in population work little by little to an international level of research sophistication.

The Second Objective

This objective aims at increasing the quantity and improving the quality of social research on population problems in Southeast Asia. Three aspects of this objective will be examined separately: the program's focus (population), the improvement of the quality of social research in this field, and the increase in the quantity of this type of research.

Program focus

SEAPRAP has population as its focus for research. The SEAPRAP Guidelines (approved on 21-23 May 1974) and the prospectus circulated around the region do not give a conceptual definition of what the Program Committee understands as "population." Rather it gives examples of various research areas "that could fall within the general focus of the Program." The Committee merely describes population as "broad" and leaves it at that. That a more satisfactory definition of the population concept and a better demarcation of what falls under and outside this focus have to be

TABLE 1
SEAPRAP Awardees' Progress of Research Skills by Level and Country

	Increase of Skills at Different Levels		
Countries	Local	National	Regional
Indonesia	Good	Good	Satisfactory
Singapore	—	V. good	Good
Malaysia	V. good	V. good	V. good
Thailand	V. good	Good	Good
Philippines	V. good	Good	Good

agreed upon and publicized. This has now become imperative for the Committee's and the Program consumers' benefits.

The Committee members have been divided between those who at one round or the other would circumscribe population problems around a demographic view, and those who would broaden it more along larger socio-economic lines. Listening to the tapes of the selection meetings in the first five rounds one may even detect an occasional fluctuation between the two tendencies within an individual member. In this the Committee members reflect the difficulties felt throughout the years in the population field. As remarked by Dr Fawcett, up to 1975, population studies boundaries were much clearer as population research dealt mostly with fertility, KAP studies, and migration. In recent years, more specially since the 1975 Bucharest population meeting, the interaction between population and development issues has become a major concern. This is a good direction if any, but one that makes for a focus much more diffused.

There is no doubt then that a well thought out definition of the population focus of SEAPRAP will facilitate the Committee's work. This definition could revolve around the three population components suggested by Dr O. Simmons (in the last round of awards): growth (and change), distribution, and composition. As each variable is carefully explained, the boundaries of each could then easily be set. Consequently, this should be reflected in the prospectus through a list of clear-cut guidelines for or examples of the research areas encompassed within each component. In this connection it might be a good idea in order to facilitate the Committee's work if, before the September 1977 meeting, each Committee member were to attempt such a task (definition of population focus and delineation of boundaries of population research under SEAPRAP) and circulate it. The discussion that will follow will then be well prepared, less time-consuming, and well-worth it.

This will naturally also help the Program's consumers, the applicants. Past and present applicants are divided in their reading and perception of what is subsumed under "population." The majority (about 65 percent) of those interviewed among the awardees and applicants think that the Program focuses basically on fertility, KAP, and possibly migration studies. The prospectus is read as dealing mostly with fertility and family planning issues. The rest of the interviewees in this category (35 percent) insist that they understand the Program's focus as very broad on the basis of the prospectus' words, that is, " . . . a wide variety of research problems relating to population but [which] excludes reproductive biology." Their reading of the prospectus' list of examples is selective, dwelling mostly on the second and fourth paragraphs ("population variables" was taken by them in a very broad sense). In the case of one applicant this is even further misunderstood to be "any population-related research outside of biology concerns." A good many in this last group often confuse "population-related research" with "population research."

The request coming from them, that these terms be more tightly defined, should then be well taken. After all it meets the desire of the Committee members to resolve the matter once and for all.

As for the advisers and resource persons, their views match those of the Committee members. The five representatives of family planning organizations (FPO) in Malaysia, Thailand, and Indonesia, and the Population Center Foundation (PCF) in the Philippines find the number of research projects focusing on family planning, fertility, and KAP studies quite significant (they form a majority bloc among the SEAPRAP awards) and satisfactory. This group expresses very little patience for the other topics and recommends population policy and action program-oriented (including population education) projects as the only focus of SEAPRAP.

Ten out of 27 Indonesia-based advisers and resource persons favor a strictly demographic orientation while 12 would like to see population in its broad sense be the

basic focus of the research projects. The latter are satisfied with the present orientation of the projects, i.e., studying broader population problems with a strong demographic component included. The rest, or five, find the great number of demography-oriented projects sufficient for the present and advocate a broadening of the scope with a development component added to that of population (see Table 2).

TABLE 2
Preferred Program Focus by Advisers and Resource Persons

Advisers & Resource Persons	Focus Desired	
	Population	Population & Development
FPO representatives	5 (demographic sense)	—
Indonesia respondents	10 (demographic sense)	—
Indonesia respondents	12 (broad sense)	5
Thailand/Singapore/ Malaysia/Philippines respondents	6 (demographic sense) 10 (broad sense)	24
TOTAL	43	29

Taking the advisers and resource persons from Singapore, Malaysia, Thailand, and the Philippines together (the FPO and PCF representatives mentioned earlier are excluded from this sample), the following picture can be drawn. All are agreed that up to the present finished and on-going projects, as gleaned from the prospectus listing, have been in line with the concerns of the times. Out of 40 respondents in these four countries only six support the idea that the demographic orientation taken by the majority of the projects is right and should be maintained. Ten respondents would keep a population focus and broaden it. Twenty suggest that a population focus, though relatively satisfactory (i.e., despite the "too many" fertility and family planning studies), should give way in the future to a "development and population" concern. Four respondents did not know enough about SEAPRAP to comment on its focus, but they nevertheless expressed an interest in seeing the focus broadened to include a development study component.

Summarizing the preferences of advisers, resource persons, and other contacts regarding the focus of the program for the future (if any), the picture that emerges is as shown in Table 2. This means that the great majority, 43 out of 72, or roughly 60 percent, vote for the maintenance of a population focus, the understanding of which varies (of this majority 49 percent favor a demographic project approach, 51 percent a broader one). About 40 per cent of the respondents would broaden the focus considerably.

In my opinion, since the Committee members have always seen the population focus connected to existing development patterns, the population focus should remain provided it is more satisfactorily defined and clearly delineated. By officially adding the development component side by side with population, they would make the focus more diffused and the Program more difficult to handle. After all this is a small program with limited means. Population research, still badly needed, also serves as a good cut-off point.

Quality of social research

Increase in the quality of social research in the region has been a major concern of the Program. As mentioned earlier it is rather difficult to give a fair evaluation of this. More reliance on this report is again placed on the advisers' and resource persons' comments while not totally ignoring the awardees'. Much in this regard has already been said in a previous section.

Although a few in Indonesia — probably due to their lack of exposure to high quality population research elsewhere — find the research reports of high quality and higher than is usual in their country, there is an agreement that the quality of the products is uneven. Yet all note that the Program's products should not be judged according to international social science standards but rather on these three bases: the professional growth of the awardees from the pre- to the post-SEAPRAP period, the level of training and status of social research in a given country, and the target clientele of the Program, that is, young inexperienced social researchers.

The first of these bases would have to be examined cumulatively throughout the five countries, which at this stage is not possible here. But, relying on our senior interviewees whose statements are looked at globally, one must acknowledge a modest, yet encouraging gain in quality, with good potentials for the future. Across the five countries, there is a consensus that the SEAPRAP awards have further strengthened the existing attempts at a higher level of quality of research. This was best summed up by Dr Mary Hollnsteiner who remarked that SEAPRAP has given an impetus to the development of better empirical work through a strong support for quantitative analysis. According to her there is now the beginning of an empirical tradition which hardly existed in the region a few years back. In areas where this is still weak, such as in Indonesia, steps are being taken to remedy research training deficiencies (research design, methodology, analysis) to respond better to the exigencies of research expected under SEAPRAP (this was spurred on by the higher number of application rejections). This is a very healthy step forward and a guarantee for higher quality work.

Where the quality of research was fairly low, SEAPRAP has done what no one else had ever attempted to do by giving a chance to promising researchers to rework their proposals with the technical assistance of an adviser assigned to them for the purpose. By being responsive to the research needs and flexible in its operations, the Program has gone out of the beaten path of foundations by making the award conditional to producing a largely improved proposal and better methodology. The interesting result of this is the improvement in these awardees' work as witnessed by the marked improvement in most reworked products and a beneficial interaction of most awardees with their appointed advisers. Everybody is aware that quality is acquired step by step. All the Program aims to do is for young people to make the first important step without which the other steps cannot be taken. In this, it is the consensus of all that SEAPRAP is uniquely responsible in the region for doing it.

Quantity of social research

Much of the information on the increase in the quantity of social research will come from the Coordinator's progress reports and from the evaluation which he is conducting from the SEAPRAP office. This is also an aspect that was touched upon earlier in this report when the geographical spread of awards was discussed. The interviewees also fully realize that the present increase of awards to 65 awardees (as of May 1977) has tremendously increased the number of social research projects on population in the region, especially in the provincial areas where not much would have happened if it had not been for SEAPRAP's assistance.

Another development should be cited here as it enhances the growth of an interest in population research and has become a spur for more and better applications. It is the

informal network of advisers and resource persons which the SEAPRAP Committee members and Project Coordinator have developed during the past three years throughout the five ASEAN countries. They were chosen on the basis of their expertise in population and social science research and their integrity. Most of them were known to the Committee members and the Project Coordinator and a few were referred to SEAPRAP by this circle of advisers mostly during the Coordinator's visit to the various research centers. These advisers readily accept the invitation to advise new awardees whenever they are asked. They do not receive any honorarium for this although when asked to travel, their transportation expenses and per diem allowances are taken care of by SEAPRAP. These people follow their advisees very closely. They make it possible for SEAPRAP to confidently spread its awards to provincial areas and, hence, to increase the quantity of social research in the region. Were it not for these advisers, it would hardly be possible for the Program to make more awards. In this connection, the Project Coordinator successfully handles the Program's relations with them.

These advisers are very happy with the Program and their limited role has been a real contribution. As they admit, their reward is to see good research multiply in the region. They are also responsible for some refereeing and much scouting around for good applicants.

Since SEAPRAP has no money for this, it might be worthwhile for a donor agency to sponsor a gathering of these advisers to discuss SEAPRAP, the problems encountered, the guidelines for better adviser-advisee relationship, the state of population research in the area, etc., over a period of two to three days. This meeting would be held with the Committee members, the SEAPRAP administration , and the representatives of various donor agencies. Much benefit would come of it in terms of future improvements in the quality and quantity of population research in the area.

The best gauge of the increase of research in the region is found in the activities of the awardees themselves. Out of the 37 interviewed all but one are still involved in population work and/or research.

Those who have completed their award have moved on to other research work within their institution or, in the case of some people who got their degree, outside, in another institution. In many cases they do teach on a part-time basis. These awardees admit that they make use of their research findings and methodology to expose their students to population problems. They are also called, often informally, by other graduate students or young researchers to advise them in some of their research problems, for example, in the Philippines, Brigida Jayme has moved to the Population Center Foundation where she looks at research utilization, but is also frequently approached for consultation; de Guzman does this at the University of the Philippines Population Institute (UPPI).

To sum up, on the whole SEAPRAP has gone quite a long way to give the necessary impetus to more and better population research in the region particularly in the remote areas and small provincial research institutions. Yet looking at the five countries as a whole and individually, the number is still small. It is the general consensus of the interviewees that more awards will be needed throughout to establish a solid core of population and social science researchers. Another problem remains to be tackled, and it is that of a follow-up program to strengthen what has been achieved and to help the young awardees in small research centers to move up to a higher step of research sophistication. This will be touched upon in the third section of this report.

The Third Objective

SEAPRAP aims finally "to facilitate the flow of information about population research developed in the Program as well as its implications for policy and planning" in Southeast Asia.

So far nine reports have been published in mimeographed form by SEAPRAP and

distributed free of charge throughout the region to advisers, awardees, and research institutions selected by the Coordinator. Not everybody receives all the reports and the rationale for this will be explained in the Coordinator's report. Several advisers have commented in writing on the awardees' reports and the Coordinator's report will reflect these comments as well. What is the reaction from the field?

The most uncritical comments come from the awardees who find the reports "good" and "stimulating," except for four (one Malaysian, one Thai, and two Filipinos) who felt that the quality was uneven. The latter comment is also the advisers' and resource persons' judgement. But sad to say, only a handful admitted having read the reports carefully. One reason advanced for this is that the reports have only appeared fairly recently throughout 1976 (two of them were published in 1975) and this gave most of the reports recipients little time to read them.

Although it is the only case of this I encountered, one resource person in Manila, Dr Lourdes Quisumbing, mentioned using Philippine reports, those of Castro, Jayme, and Junsay, in her methodology and family life classes at the graduate school level. She uses them as "neat methodological cases" and as sources for illustrative data. UPPI and the Institute of Philippine Culture in Manila and the Population Institute of Chulalongkorn University, Bangkok have them as references in their libraries.

Three informants from family planning agencies (or Boards) in Malaysia and Thailand, all administrators, could not make use of the reports as they complained that the approach and language were too technical for them.* Because of this the reports are of potential rather than actual utility to them. On the whole satisfaction is expressed that there now is a body of data on fertility and family planning available but awaiting to be translated in layman's language. Since they are busy people they seldom bother going beyond the first pages and, hence, miss the pages on policy implications. It is suggested that each report begins with a two-page abstract written for the use of agency administrators.

Most awardees also complain that other than the few reports published so far they hardly know about other SEAPRAP awardees and their research. They strongly suggest that a listing of all the SEAPRAP awardees with the title of their research and complete address be circulated among them. They believe that this information could initiate some communication between people having common or related research interests. This would really be one good channel for better dissemination. I found that in larger cities such as Kuala Lumpur, Bangkok, and Manila, awardees did not even know of each other within the city and in one case (Mahidol University) within the university (in this case, I was able to be of help in getting them acquainted with each other).

At the local level, in Bangkok, Kuala Lumpur, Manila, Cagayan de Oro, Jember, and Ujung Pandang, individual awardees have organized seminars or meetings where they shared their findings and conclusions with their university colleagues. In Kuala Lumpur, Bangkok, Jakarta, and Surabaya, several awardees have also met with representatives of family planning organizations, an experience which proved satisfactory for both sides.

Many awardees have also expressed the desire for meetings with each other. I have strongly suggested to them that such initiative is strongly encouraged but is also left entirely to them as the Program has no resources for the purpose.

The implementation of SEAPRAP's third objective has suffered in limited publications. Basically the problem has been one of logistics and finances. Much time is needed for the translation phase (for the Indonesian reports), consultations by mail with

*When a social scientist writes about his own people everyone expects to understand the results. But this often is not so as social scientists are trained to speak to one another in a language peculiar to their social science discipline. If they have an obligation to share their findings with the academic community, they also have an obligation to the public, and more so when they deal with problems and findings which bear on public policies or programs. But, they should do so in a language that reports these findings both accurately and intelligibly.

the writers, and the editing of the manuscripts. Financing is needed for the mimeographing and mailing of the copies.

Since long reports are expensive to publish and circulate in the region, it might be wise for the Committee and Coordinator to consider shorter versions or article length papers for specialists and research institutions and short abstracts for administrators and policy makers.

For better dissemination of information in the region, the Program could also consider making use, through the Coordinator, of national and regional publications (newspaper articles *a la Depth News* or articles in *Asia Week, Far Eastern Economic Review)* to popularize (without betraying) the findings and conclusions of recent reports. These could in turn be translated in Bahasa Indonesia (for *Tempo* or other news magazines) or Thai. In fact, the latter should be done locally by the awardee himself.

In conclusion, the rating on the implementation of SEAPRAP's third objective would have to be low. There are problems which the Program Committee members are aware of and are working on. Since this objective is not as high in priority as the others, a more modest and manageable approach to dissemination should be looked into.

To summarize what has been said in this section, the Program's objectives have been realistic and well implemented. There is naturally room for improvements or changes (minor) especially in the dissemination of the reports (possibly in shorter form) and of information. The Program's focus on population needs closer scrutiny so as to clarify certain issues. Fortunately, this is in the Committee's hands and should soon be settled. Even before looking at the Program's mechanisms and on the basis of my evaluation of the objectives implemented, I should like to state that SEAPRAP ranks very high in the regional social science scene as a worthwhile and unique program.

SEAPRAP MECHANISMS

Under this category several aspects of the Program are examined, namely, its administration, the Program Committee, the Project Coordinator, the adviser-advisee relationship, and the applicant's and awardees' use of their national language. A special section on assumptions and possibilities is not included here as most of the opinions called for are entered in appropriate subsections throughout the report and briefly in the conclusion.

Administration

From my experiences in the last 15 years with new organizations and programs (mostly in the Philippines and a few others in the rest of Southeast Asia) what makes a few tick and a good many flounder is the quality, or its absence, of a certain type of leadership in the governing committee. The leadership combines expertise, efficiency, and ability to work with one another and to inspire others. All these aspects of leadership further generate a high degree of credibility necessary to relate to a clientele. But they, in turn, would be fruitless if the work is not faithfully and innovatively carried out by an executive officer. This in a nutshell makes for a successful program. In outlining it I have described what basically (although not wholly, as the awardees and their advisers also play a great role) makes SEAPRAP a success. This is also the opinion of all the interviewees who are close to the Program. I am almost tempted to let it go at that and stop here. However, as in anything human there is always room for improvement. The remarks that follow will then dwell more selectively on suggestions for the betterment of the present program rather than go unnecessarily into every detail.

Before moving on, a word should be said about the administration budget of SEAPRAP. There is a concern among a few people who belong to the circle of donor agencies that the overhead in this Program, as in similar programs elsewhere, tends to be very high. On the one hand, it is admitted that any program worth its salt has to be

administered properly and that means paying the price for it. On the other hand, it remains that administrators have to watch out for an overhead that might be construed to perpetuate a given bureaucracy for its own sake at the expense of the program itself and of its actual and potential clientele in the field. Fortunately, this is not so in SEAPRAP's case, as the Committee and the agencies are sensitive to the problem. In its September meeting, the Committee might consider discussing possible alternatives to the present administration scheme and its overhead in order to cut down on administrative expenses and see more money go to awards.

The location of SEAPRAP at the International Development Research Center (IDRC), Singapore, goes back to the Program's inception in 1974 when no local or regional institution proved ready to take on its administration. Because of this location and IDRC's financial backing along with Ford's, the Program has been identified with IDRC. The effect has been that IDRC's prestige in the region was attached to SEAPRAP, or at least it is perceived as such by most. As SEAPRAP developed its own image "as a good and successful Program" it in turn helped increase IDRC's stock in the region. SEAPRAP's stature and credibility are due not only to its location at IDRC but also to the efficient and satisfactory manner with which the Program has been administered. This is an important factor which would have to be seriously considered in the event other plans for SEAPRAP's location are studied.

But the other side of the coin is rather unfortunate. The advisers close to the Program excepted, hardly anyone in the region is aware that the Program is governed by a Program Committee made up of Southeast Asian social scientists and administered by a Southeast Asian Officer. The prospectus that publicizes the Program is responsible for this as the Committee's mention is only in connection with the selection of the awardees. To correct this more emphasis should be given to the Southeast Asian character of the Program and its Committee (acknowledging in passing the financial support of IDRC and the Ford Foundation).

The Program Committee

The Committee is composed of five Southeast Asian social scientists chosen on the basis of their expertise in Southeast Asian social science and population research. Each member also represents one of the five ASEAN countries. They were originally appointed for a two-year term, but at the request of the donor agencies this was extended until the end of the present Program.

For the past three years the Committee has functioned extremely well. As expected each member is different in personality, culture, academic background, and ideas, yet throughout the years they have successfully managed these differences to form a spirited team working very smoothly together. Listening to a random sampling of taped meetings, I was greatly impressed by their deliberations, hard work (they come to the meetings very well prepared), and judicious decisions. Rather than put decisions through a vote, they usually arrive at them through consensus, a very Southeast Asian approach to decision-making. Of note also in this context is the able and balanced leadership of the Program Committee's Chairman, Professor Kernial Sandhu.

Since the beginning the Committee has been involved in formulating the Program policies, but it also has kept tab on the Program's progress. This has enabled them to refine certain criteria and to work on the problem of the SEAPRAP's population focus, reflecting in this the difficulties of today's population experts. Over the six rounds this question of difficulty has taken much of the Committee's attention and hopefully is about to be resolved in the September meeting. The other difficulty, that of the priority of awards to applicants from provincial institutions over degree-seeking ones, was satisfactorily resolved in the last round of awards. In this case, the decision favored the provincial researchers from outside metropolitan areas over the urban ones, leaving the

degree-seeking researchers from abroad to last in priority. If this has been a somewhat slow process, one should remember that the Program's concern to seek inexperienced but promising researchers is unique and one for which there is no precedent to fall back on.

Much of the Committee members' work has been spent on the screening, selecting, and judging of applications. Despite their heavy load of work and responsibilities, they have come to the selection meetings well prepared after giving their own ratings for each of the proposals submitted for a specific round of awards. The selection meetings themselves are characterized by serious interaction, at a very professional level, with its share of agreements and disagreements, and above-parochial interests. In brief, I find the meetings a model of "team-work" too rarely seen among professionals of such a caliber.

Besides these activities, the members also help the Coordinator by providing contacts and assistance when he visits each country. They also contact advisers and consultants whenever needed. When requested, some of them even take on the role of advisers in special cases following the Committee's approval. One of the minor functions of the Committee members is to provide publicity for the Program in their respective countries. This is done usually through press releases in the specific national or official language. To do more than this would be difficult as the members' workload is very heavy.

The Program Committee has done an excellent job in the past three and a half years and everything indicates that they will continue to do so.

The Project Coordinator and His Staff

The Project Coordinator, Dr Pedro V. Flores, was appointed to be the executive officer of the Program in 1974. He is assisted in this by an assistant and a secretary. As an administrator, he has performed excellently. He has worked very well with the Program Committee translating their policies and suggestions in an intelligent and innovative manner. His suggestions and ideas have also been well received by the Committee, an indication of the high level of confidence achieved through more than three years of interaction. Although an education specialist (with a sociological background), he has developed through this program an expertise of his own in the field of population studies in the region. This also helps in his relations with advisers and resource persons throughout the five ASEAN countries. All of them recognize the high quality of the work performed by the Project Coordinator as SEAPRAP's executive officer and his keen understanding of population problems as well as the specific situational difficulties of the local institutions.

The awardees themselves are very happy with the way the Program has been administered. Letters are answered very promptly. When Dr Flores is absent, his Program Assistant, Ms Julie Hui, answers the mail very promptly and competently. In this, incidentally, she has developed a very keen sense for assessing the administrative problems presented by the awardees and for suggesting intelligent solutions. Both Dr Flores and Ms Hui have also handled the grant's disbursements in a very expeditious way to the full satisfaction of the awardees. In the future, more reliance in administrative matters will be placed on Ms Julie Hui so as to allow Dr Flores more time to handle more professional matters.

In the first two years of the Program, Dr Flores visited all relevant (i.e., relevant to population and social science research) institutions of the region for purposes of encouraging applications and publicizing the Program. He did this once a year in most cases, twice a year in other cases, depending on the business at hand. This also enabled him to assess each institution's potential for population and social science research. After the first awards were made he kept tabs on the awardees' need of help, particularly the Indonesian awardees who found these visits not only encouraging but also very helpful in solving some of their problems.

In the third year of the Program, the number of visits decreased. This was due to the Coordinator's added duties at IDRC which increased his workload considerably. Fortunately, on the whole, the Program has not suffered. This has allowed him to rearrange his schedule accordingly and to obtain the continued help of a competent assistant. But I suggest that the visits to awardees and relevant institutions be continued on a once a year basis. This is very important to the awardees and this fits very well with the first objective of the Program whose target is the "young," inexperienced researcher who needs more support than other more senior specialists. This is particularly true of the awardees in provincial institutions without a readily available adviser. The Coordinator should continue to look very closely into the adviser-advisee interaction for better results. In this context he could pay less attention to the awardees who have a strong professional or academic background and are well acquainted with SEAPRAP. This would allow him to spend more time with the awardees who are less well equipped professionally. Matters which are merely administrative and publicizing in nature can easily be delegated to the office staff in order to free the Coordinator for more substantive and professional activities. Nevertheless, he should remain on the look-out for new advisers through his network of resource persons. Travelling throughout the region (as I have experienced in six short weeks) is very often an exhausting (though it can be satisfying professionally) venture which is not always appreciated. But, Dr Flores has done it well.

The Project Coordinator reads carefully each application and prepares short comments which in turn are sent to the Committee members for their own rating and evaluation. In cases where the proposals need improvements and if there is enough time, he corresponds with the applicants suggesting a re-write of the proposal. This takes time and it is a responsibility which demands professional attention which he cannot delegate. Then when the selection meeting is held he participates in the screening of the applications without decision power. So far Dr Flores has performed very well in all the aspects of this work.

Reports on the progress of the Program have been sent regularly to IDRC and to the Committee members. As for the dissemination of the awardees' research reports, as mentioned earlier, there is a problem of logistics which the Committee should discuss.

On the basis of this, a very high mark should go to the performance of the Project Coordinator and his staff.

Adviser-Advisee Relationship

An innovative feature of SEAPRAP is the recruitment on an *ad-hoc* basis of an adviser for an awardee from a provincial or regional institution. Often the award is made conditionally on this basis. The adviser is a professional researcher selected among the network utilized by the Program throughout the past three years. He is a person chosen for his competence, reliability, availability, and accessibility to the awardee. The relationship is purely on a voluntary and "as-the-need-arises" basis. Whatever expenses occur (transportation and travel per diem) are covered by the specific project.

The relationship varies on a case to case pattern and it would be too lengthy to review each case. At this stage it is sufficient to note, as was done elsewhere, the general satisfaction of the awardees on their part of the deal.

The advisers themselves also generally express satisfaction with their involvement in the projects. In Indonesia, advisers from Gadjah Mada and Syiah Kuala Universities would like a closer interaction with their advisees at the center. This, they suggested, would also give the young researchers more time to read up on background literature at the center library. They would invite more consultation in the later stages of the projects as they feel that their advisees tend to rush through the analysis and report writing stages in order "to get it over with." This relationship has worked well in the early phases of the

projects concerned. How to improve the continued relationship in the later phases has elicited some suggestions. One is to work out a time-table of consultations with the provision that the awardee does not proceed beyond one phase without prior consultation with his adviser; this would be formalized in a document approved by the Project Coordinator. Another suggestion is to have a meeting at the national/provincial level with the advisers, the Coordinator, and the national Committee member to discuss how to improve this type of relationship. The latter suggestion should be favorably considered by the Committee.

This adviser-advisee aspect of the Program should be maintained at all costs and further improved upon.

Language

Another unique feature of SEAPRAP is that it gives the applicants the option of submitting their proposals, and the awardees their reports, either in English or in their own national language. This is particularly relevant to Indonesia and Thailand where English is not used as a language of instruction or as an official medium of communication. A large number of applicants and awardees from Indonesia take advantage of this feature of the Program to write their proposals and reports in Bahasa Indonesia. The Thais on the whole have been shy to use Thai in this regard.

The Indonesian awardees interviewed expressed their satisfaction at being able to do so. They all were well aware of this language provision. To most of the Thais, the information came as a surprise as they admitted to not having paid attention to the notice in the prospectus and in the application forms. Those who did preferred to use English as they thought (wrongly) that a proposal in Thai would not be favorably considered by the Committee. It is very likely, though I have no evidence of it, that those who claimed not to be aware of this language provision had the latter in mind, too, and might have been embarrassed to admit it. To all of them it was a relief that the use of a specific language would not prejudice their application.

Applications submitted in the awardees' national language are in turn translated into English for the benefit of the Coordinator and the Program Committee. It is in this connection that there have been some complaints. Several people have noted that in some cases the translation into English has not been particularly faithful in the rendering of certain concepts and ideas. Most of the translation work has been left to language specialists who have had hardly any serious acquaintance with social science concepts. So their rendition of certain terms is *loose.* To remedy this situation, the interviewees concur in strongly suggesting that the translation be rechecked by a population specialist or a good social scientist fluent in both languages.

All are agreed further that the reports or publications based on them be circulated in the country of origin in the national language. This would make them more available, especially to officials of local population and welfare agencies in terms understood by them (as was mentioned earlier).

There is also a consensus among most Indonesians that as their work is done in their national language, this SEAPRAP policy encourages the further development of research in their own country. In recognizing Bahasa Indonesia in proposals and reports the Program has increased its prestige locally.

Assessing the mechanisms that implement SEAPRAP's objectives, I am happy to report that they have indeed worked very well. There is a fine and dynamic working relationship between the Committee members and the Project Coordinator. Their ability, in turn, to develop an informal network of advisers and resource persons, elicit applications from and grant awards to promising young researchers in the field of population, and their monitoring of the latter has made this Program a very successful

one. In doing this SEAPRAP has gone a long way towards the growth of social science research in the five ASEAN countries.

CONCLUSIONS AND SUGGESTIONS FOR THE FUTURE

The conclusions offered here underline several of the points made previously and are concerned with the conduct of the current Program (under which the last round of awards will be made in May 1978). The suggestions that follow bring together the interviewees' desiderata concerning the future of SEAPRAP in the event it is extended.

Conclusions

As it stands now, SEAPRAP still has two more rounds of awards to go until May 1978. This means that after the last awards are made and granting that the Program runs its normal course, the administration of these last awards and the winding up phase will eventually bring SEAPRAP's life to an end by December 1979. This interim evaluation as of this June 1977 then stands at a little more than the halfway month of the Program's administrative life and at a time when 75 percent of the awards have been made (six out of eight rounds of awards). On the basis of this evaluation which looked into all the aspects of the Program, it is gratifying to report that it is a well-charted venture with good built-in mechanisms to keep it straight on course. Its objectives have been well laid out, always referred to in the meetings, and dynamically implemented. A strong Program Committee is firmly in charge and its directions are faithfully and imaginatively followed and developed by the Project Coordinator.

The Program's strengths lie in its ability to reach and help develop young researchers, strengthen research capabilities in population studies throughout the five ASEAN countries, and, through its informal network of advisers, lay down the foundations for better regional cooperation among social scientists which could possibly emerge later in a more institutionalized manner. Behind these are two important mechanisms: a cohesive Program Committee and an effective Project Coordinator. The problems that have developed have been satisfactorily met or solved. The Committee is still working on a more workable delineation of the population focus.

A better form for report dissemination, possibly in article or abstract form, and a listing of research information among SEAPRAP awardees as well as ways to implement more adequately the third (and secondary) objective of the Program could still be worked out. But these needed improvements do not in any way detract from the quality already reached.

In a nutshell, SEAPRAP is a very good Program that fully justifies the trust put by the donor agencies in it.

This being said, the observer of the social science research training scene in this region cannot but raise the question of a follow-up to such a program, a question which is not within the present program's scope, yet one which is vital to the achievement of the first objective. This deals with the mechanisms needed to sustain the initial momentum given by SEAPRAP. A modest number of young population researchers particularly in the provincial institutions have been given the chance of gaining a certain degree of research expertise. But who is going to assist them in further developing quality work and moving up to a higher degree of research sophistication? For those located in small places where the logistics for such growth are absent there is the problem of professional isolation and insulation which eventually could lead to intellectual stagnation or mediocrity. The problem is real and in the following suggestions some solutions to the follow-up problem might lead toward an adequate solution.

Suggestions for SEAPRAP's future

Since several suggestions are made in the body of the report this section will limit itself to those concerning the future of SEAPRAP beyond the final phase of 1978-1979. The

question of a future for SEAPRAP after this Program runs its appointed course stems from the need for a follow-up to what has been accomplished in the present program and from the unanimous clamor coming from the field.

In this regard several suggestions — some not applicable — were made. Since there was some overlapping and for the sake of economy (time and space), I took the liberty of lumping them together without specifying who made these suggestions. They are the results of field interviews. Whenever appropriate, I offer my own remarks.

The first part of this sub-section deals with suggestions for a follow-up program and the second with this program's possible location.

Follow-up program

In order to maximize the present Program's achievements it is suggested that a follow-up two-phase program run concomitantly for four more years. In this, one yearly round of awards (instead of two before) would continue the present type of awards from December 1978 to December 1981 while the other round of awards from May 1979 to May 1982 would be reserved for another type of awards, this time to former awardees. In the latter, former awardees from provincial institutions would compete for awards involving a higher degree of research sophistication, thus giving them a chance to grow professionally.

Another variant of this suggested program differs in the matter of time with two more years only for the extension of the present Program while the new phase of the program would be kept for former awardees for four years. Other suggestions, as mentioned much earlier, include a combined "Population and Development" focus in either or both phases.

To my mind the first plan looks better but it does not entirely solve the follow-up problem as there will always be a need for more professionalism and better intellectual support in the field of research. Better linkages should be established and the advisers' or resource persons' role should be strengthened and possibly institutionalized. Since there are attempts at this in Jakarta, Yogyakarta and there are possibilities for this in other areas, I strongly suggest that a donor agency be approached to consider a grant for a meeting of key SEAPRAP advisers with the Program Committee members to study the matter and develop a viable plan for a realistic follow-up program. Besides considering this along with the above suggestions on the "two-phase" program, they could also study the possibility of organizing themselves into a more formal population research advisers network.

Possible location for SEAPRAP

Only three out of the 28 resource persons interviewed have suggested that the administration of SEAPRAP be located at a local social science research institution in one of the five ASEAN countries. Their rationale stems from their desire to see a Southeast Asian Program based in a Southeast Asian center rather than at IDRC which they consider "alien." It should be added that they have no quarrel with IDRC's efficiency in the handling of the Program. It is also true that their objection against the location at IDRC weakened considerably when they learned that the Program is governed by a Southeast Asian Program Committee which decides solely on the Program and that the present location is just a matter of convenience, with IDRC having no control on the running of the Program itself.

Queried on this suggestion, the majority of the interviewees reacted in a very lukewarm fashion. Some pointed out that, outside of the Institute of Southeast Asian Studies (ISEAS), there is no social science research institution with a truly "Southeast Asian outlook." Others said that no other institution has the administrative capability and the wide range of contacts needed to run such a Program. A few also mentioned that

although ISEAS could possibly be the only regional institution capable of administering the Program, in the minds of many it is too dependent on the Singaporean government and the University of Singapore to have the necessary credibility for such an undertaking. Again this objection weakened when the objectors against ISEAS were told that there is a large difference between the location of a program and its control.

These comments have to be mentioned as they are indicative (on the part of some vocal scholars) of a difficulty in freeing themselves of the sequels of colonialism. Professor Sandhu put it well when he commented that the greatest obstacles to overcome with regard to trusting local institutions are the lack of confidence social scientists have in their own institutions and the suspicion of favoritism, i.e., that administrators will favor their own countrymates or close friends. These are unfortunately facts of life which should not be overlooked. As mentioned earlier if ever the location problem is seriously considered, care should be taken to insure the Program's continuing credibility and efficiency. If the Program ends by 1979, there is no need to even examine this problem. If an extension is considered, then I would leave it to the Program Committee to discuss all possible alternatives with the donor agencies concerned. In this event, I should add that personally I would favor a Southeast Asian move provided the two conditions of credibility and efficiency are met by the best Southeast Asian institution considered. This in itself would really tap the local manpower resources available in the region and educate the doubting Thomases around. One should also remember that whatever the decision taken there will always be criticisms one way or the other. Admittedly, there is much to chew on here.

Concluding remarks

The interim evaluation of SEAPRAP I am now concluding has been a richly educative experience. It is also a happy one as the Program is really a success story. Everywhere I went to, the reception was warm and positive. But it was also a very tiring one, with some 120 interviews in five countries over a six-week period. For the future, I would suggest that the final evaluation be less extensive or more in depth with a smaller selective sampling of key interviewees.

I would like to thank the SEAPRAP Project Coordinator and his staff and the Program Committee members for so graciously helping me do my evaluation work freely, move about efficiently and avail myself of their expertise, and for being patient with me. More power to SEAPRAP!

Appendix B

THE SOUTHEAST ASIA POPULATION RESEARCH AWARDS PROGRAM: A TERMINAL EVALUATION

*Peter Pirie**

BACKGROUND

The request to make this terminal report was transmitted to me by Dr Wilfredo Arce, Project Coordinator, Southeast Asia Population Research Awards Program (SEAPRAP), in August 1980 from the Program Committee. With this request came the document "Guidelines for the Terminal Evaluation" dated 22 July 1980. I accepted this invitation and also one to visit the SEAPRAP Secretariat in Singapore. This visit was made on 12–13 November, and during this time I was given copies of the major documents relating to the project, notably the two previous evaluations by Gerard Rixhon, Ford Foundation, and Dr Pedro Flores, the first SEAPRAP Project Coordinator, as well as lists of grantees and minutes of recent Program Committee meetings. I visited Singapore for the specific purpose of gathering information for the terminal evaluation report between 23 June and 4 August 1981. During this time, I visited Malaysia, Indonesia, the Philippines, and Thailand to interview persons associated with the Program.

My direct connection with SEAPRAP prior to this assignment had been minimal, being limited to writing letters of support for some candidates, assisting in the supervision of a few, and being interviewed by Mr Rixhon during his evaluation tour in 1977. At this time, I was working at the Faculty of Economics and Administration, University of Malaya, Kuala Lumpur, on a United Nations assignment to assist the University establish a Population Studies Program. Over the period 1975–1980 I spent just over three years in Malaysia and during this time was involved in arranging monetary support and academic supervision for junior staff and students engaged in population research. My experience as Assistant Director for Graduate Study in the East-West Population Institute, East-West Center, Honolulu, was also of this type, involving students from most Asian countries. My role in population institution building in the region, with external knowledge of SEAPRAP's work and its place in the population teaching and research establishment in Southeast Asia, but with no direct connection with it, comprise my qualifications for making this terminal report.

A SHORT HISTORY OF SEAPRAP

The beginnings of SEAPRAP go back to the early 1970s when Lyle Saunders (Ford Foundation, Bangkok), John Friesen (International Development Research Center [IDRC], Singapore), Ozzie Simmons (Ford Foundation, Bangkok, later the Philippines), and David Szanton (Ford Foundation, Bangkok) developed the basic idea as a way of further stimulating population activity and building institutional capacity in the region. The Ford Foundation at this time had other population programs located in

*Peter Pirie is a Professor of Geography and Population Studies at the University of Hawaii and a Research Associate at the East-West Population Institute, East-West Center, Honolulu, Hawaii.

several of the countries in Asia and was concerned with the development of a core of demographic expertise which would persist and "take off" on its own. IDRC, at the time new in the region, had broadly similar aims. There already existed a rather similar prototype program in Latin America with which Simmons had had experience.

A Consultant's Group meeting was called on 21-24 May 1974 at which the notion was discussed, objectives outlined, and SEAPRAP formally established. The "Consultant's Group" was composed of five members, one from each of the major Southeast Asian countries. They were, with their positions at the time:

Dr Kernial Sandhu
Director
Institute of Southeast Asian Studies
Singapore

Prof Yip Yat Hoong
Deputy Vice Chancellor (Development)
University of Malaya
Kuala Lumpur, Malaysia

Prof Amphon Namatra
Vice Rector for Administrative Affairs
Chulalongkorn University
Bangkok, Thailand

Dr Rodolfo Bulatao
Associate Professor of Sociology
University of the Philippines
Quezon City, Philippines

Dr Nathanael Iskandar
Director, Lembaga Demografi
University of Indonesia
Jakarta, Indonesia
(replaced, upon his death in 1978 by
Dr Masri Singarimbun
Director, Population Institute
Gadjah Mada University
Yogyakarta, Indonesia)

The selection of the group seems to have been done with care by persons with an extensive knowledge, intimate and discerning, of the human resources in Southeast Asia academia. The faith in these five (or six if the replacement for Indonesia is included) by the funding agencies proved to be fully justified. The Canadian agency, IDRC, Singapore, provided the administrative home for the Program at its inception. Dr Pedro V. Flores, Senior Program Officer, IDRC, became the first Program Coordinator on a full-time basis from 1974 to 1976.

It may be noted here that the structure of the Program was probably unique for the time in that it was set up to be governed and administered entirely by Southeast Asian academics. Only the initial concept was "expatriate" and the funding was "arranged" rather than the more usual procedure of being applied for formally in a proposal. Funding was intended to be modest, and the budget averaged out at less than US$85,000 per year. The program was initially set up for two years from 1974 (Phase I) and was extended three times, first to 1977, then to 1979, and later to 1981. Both the Ford Foundation and IDRC have indicated that they do not want to be involved in a further

extension, so that SEAPRAP will terminate this year except for administration of awards, including the last round in 1980, which have not been completed.

The countries involved were Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Burma, Cambodia, and Vietnam were originally included, but in any event no awards were made to their applicants.

Over the period 433 applications were received from which 125 grants were made. Out of these, 73 projects were completed (as of May 1980), 23 were overdue, although it is known that many of those will be completed in due course, and 28 were ongoing. The current "overdue" rate is only 24 percent, a fairly low level of which most grant giving agencies would be quite proud. These figures and the breakdown of countries are presented in Table 1.

TABLE 1
SEAPRAP Applications and Awards by Country, Rounds I-XII

	Applications Received		Awards Made		Awards/ Applications	Award Status		
Country	No.	%	No.	%	(%)	Completed	Overdue	Ongoing
Burma	1	0	0	0	—	—	—	—
Indonesia	184	42	32	26	17	27	1	4
Kampuchea	1	0	0	0	—	—	—	—
Laos	1	0	0	0	—	—	—	—
Malaysia	34	8	17	14	50	9	5	3
Philippines	98	23	30	24	31	13	9	8
Singapore	5	1	3	2	60	1	1	1
Thailand	96	22	42	34	35	23	7	12
Vietnam	10	2	0	0	—	—	—	—
Others	3	1	0	0	—	—	—	—
TOTAL	433	99	124	100	—	73	23	28

POLICIES: EVOLUTION, APPLICATION, AND SUCCESS

The Program objectives adopted were:

1. To strengthen the research capabilities of young Asian social scientists, and to provide them with technical support and guidance if required;
2. To increase the quantity and quality of social research on population problems in Southeast Asia; and
3. To facilitate the flow of information about population research developed in the program, as well as its implications for policy and planning among researchers in the region, and between researchers and government planners.

These objectives remained unmodified throughout the life of the Program, except that as a result of discussion on the Rixhon/Flores evaluations, the policy aspects of the research and the efforts to bring the research findings to the attention of government planners was dropped as "unrealistic."

The overall objectives were to be achieved by implementing the following policies:

1. Population as a field was to be widely defined, with only reproductive biology specifically excluded, and flexible, including the possibilities of providing "seed money" for exploring the feasibility of larger projects, assistance to thesis and dissertation

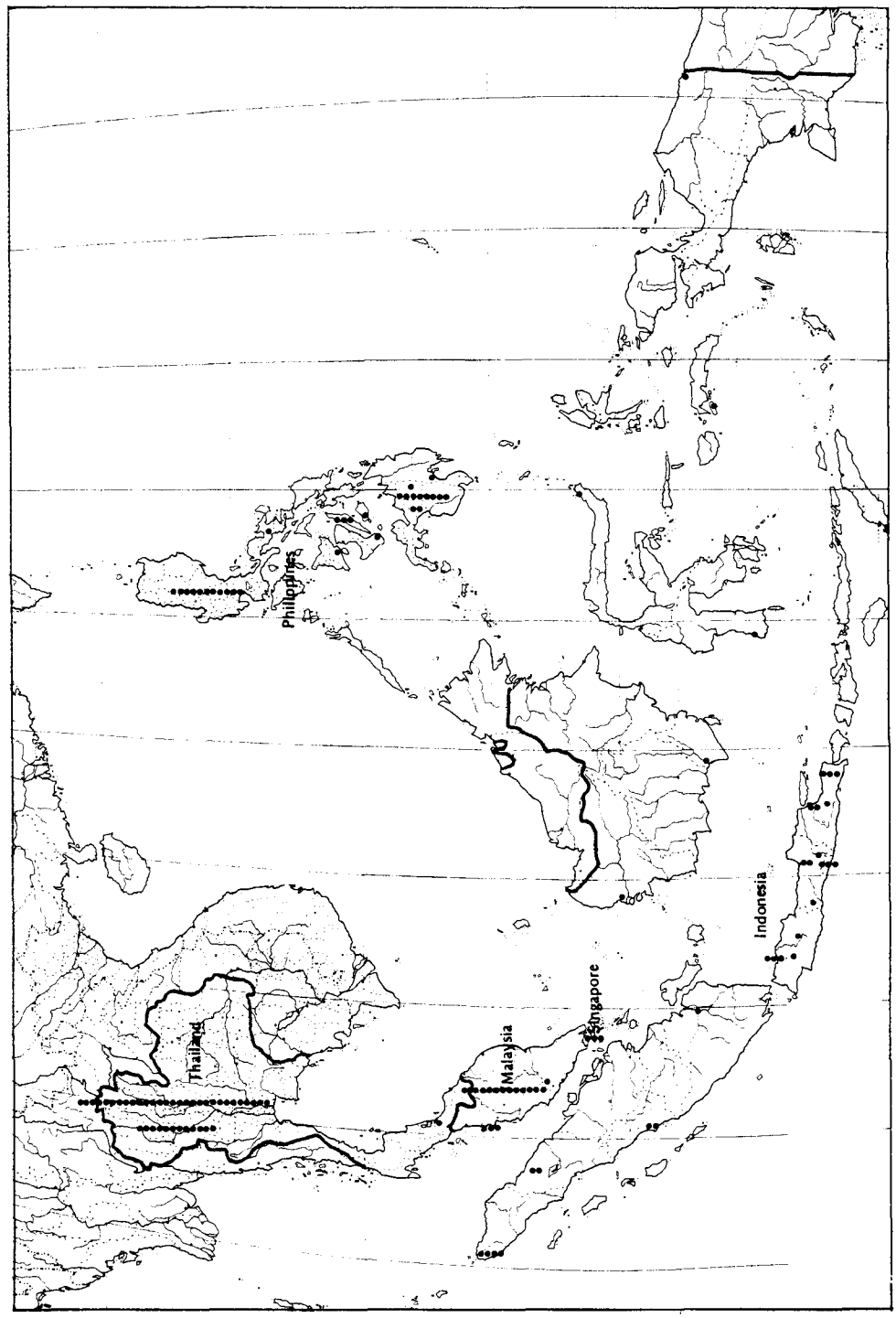


FIGURE 1
Distribution of SEAPRAP Awards in Indonesia, Malaysia, the Philippines, Singapore, and Thailand

research, and emergency and accelerated funding for some styles of research. The following areas of investigation were listed:

a. Cultural, social, structural, personality, and ecological factors implicated in population composition, distribution, growth, and change.
b. Determinants and related factors in fertility trends; factors contributing to or related to fertility regulation and family planning progress; familial, psychological, social, political, and economic effects of family planning and contraception.
c. Antecedents, processes, and consequences (demographic, social, psychological, political, economic) of population structure, distribution, and change.
d. Family structure, sexual behavior and its relationship to childbearing patterns, and child development.
e. Inter-relations between population variables and the process of social and economic development (housing, education, health, quality of the environment, etc.).
f. Population policy, including the interaction of population variables and economic policies, policy implications of population distribution and movement with reference to both urban and rural settings, and the interaction of population variables and law.
g. Evaluation of ongoing population education programs and/or development of data bases for population education programs.
h. Incentive schemes — infrastructure, opportunities; overall economic and social development programs.

Although it could be observed that two of the three major demographic variables are barely mentioned, mortality and migration, the range is sufficiently broad that few prospective grantees would feel constrained by this list. Certainly a narrow view of the field as statistical demography, or an undue emphasis on family planning was avoided.

2. A specific language policy was adopted, whereby either English or the national language of the applicant, e.g., Bahasa Indonesia, Thai, but not provincial languages such as Visayan, could be employed both for the application and the research report.

In effect this provision benefited only Indonesian awardees although it would have applied equally to Thais who instead preferred to use English. Rixhon noted that some Thai grantees professed ignorance of the provision that the national language could be used. Others felt that the use of English would give their proposals an advantage. Although he records that "to all of them it was a relief that the use of a specific language would not prejudice their application," I am not aware that more than one or two (if any) used Thai in their research reports. I had similar experiences with Thai grantees, and one or two of the more recent ones declared their intention to use Thai in the final write-up. It will be interesting to see if they do. As with Rixhon's experience in Indonesia, mine, too, was that Indonesians used their own language almost universally and without embarrassment or the suspicion that it put them at a disadvantage at least until the stage of publication. Several mentioned that they felt their work would have been published more quickly (by SEAPRAP) had it been in English, and would have been able to claim a much larger audience. In Singapore, Malaysia, and the Philippines it was accepted that English was the obvious language to use in an international competition and was besides the "research language" in each country, and no one seemed to have problems with it.

3. Awards were to be made available on a non-quota basis to applicants from the countries involved. They were to be judged primarily on the criteria of scholarly merit, relevance to the population field, feasibility, theoretical and practical importance, and potential for further development. However, applications were to be solicited particularly from young scholars (preferably under 35 years) attached to provincial institutions rather than to metropolitan ones.

This policy as it applied to the areal spread worked well, and met with universal approval from awardees, supervisors, and other resource persons, as noted by Rixhon, and confirmed during my own interviews. It addressed a widely recognized need in Southeast Asia. Perhaps here it could be noted that there were very wide disparities in the degree to which it applied to the countries involved. Standing to benefit most was Indonesia. In fact the awards made extended from Bandar Aceh to Jayapura with disproportionately few going to Universitas Indonesia in Jakarta or even Universitas Gadjah Mada. Next in benefit stood the Philippines, then Thailand. Neither Malaysia nor Singapore has a network of non-metropolitan universities so that grantees from these countries were, perforce, from the central institutions. The regional rather than a parochial view of the two Program Committee members from Malaysia and Singapore allowed them to support this policy wholeheartedly in spite of its not applying to their own countries in a very useful way. Even in Thailand, the "provincial policy" was difficult to implement effectively on account of the pattern of distribution of social scientists in Thai universities, most of them being in institutions located in Bangkok. Indeed, for example, Khon Khaen did not have a social science faculty in a service capacity until a year or so ago. Then, too, social science competence at Songkla University is still at an early stage of development. It would have been nice to have been able to involve the individual social scientists in the teachers' colleges in Thailand, but perhaps this demand can best be met through the Microlevel Studies Program for which Ford Foundation provided the initial funding.

The policy on age was also generally approved of as it is widely recognized that better established researchers had good access to other funding, but that local funding, such as that from university sources, was often not available to inexperienced researchers and was frequently in short supply and administered conservatively to minimize risk. The critical period in the careers of many researchers is in the first few years following completion of the highest degree. Teaching responsibilities, and perhaps newly acquired family obligations, can absorb so great a proportion of the energy of young staff members at this stage that the habit of research is easily broken and may be difficult to resume. SEAPRAP helped to bridge this critical period for many young academics during its time.

4. Another innovative policy applying to these grants was the provision of local supervisors, the costs of which, usually minimal, could be built into the grant budget of the awardee.

The availability of suitable advisers when SEAPRAP was initiated must have been fairly thin. As Flores mentions in his evaluation report, there were doubts, presumably among the members of the committee, about whether this arrangement would work. In any event it seems to have worked rather unevenly. In cases where a suitable and well-disposed adviser was available, it often worked extremely well. In the case of Indonesia, the adviser-advisee system seems to have been used more intensively with better effect than elsewhere. It could be noted, however, that the two Indonesian members of the Program Committee, Dr Iskandar and later Dr Masri, were the two more frequently asked to suggest "advisers" to awardees. In other cases, no suitable adviser could be found or the advisee made little or no use of the adviser's suggestions. In some other cases, the adviser was used at the writing-up stage but not for the purpose of revising the proposal to develop a final research design, for composing research instruments, or evolving fieldwork strategies.

A few awardees expressed themselves happier without an adviser, preferring to get along as best they could on their own and to be able to learn from their own mistakes, if any.

There is no doubt that even under the best conditions the problems of academic and research advising, and of being advised, are many and often serious. Even systems which

are well financed, staffed with a variety of highly competent, experienced people and working in a tradition of long standing, throw up cases of over-advising, under-advising, personality clashes, and general misunderstanding. Thus, the experience of SEAPRAP, which was largely favorable, was a fortunate one. Nevertheless, it is apparent from final reports of SEAPRAP grantees that good advice at the appropriate time could have been of great assistance in improving the output. Many grantees who had little or no advising admitted after the event that they could have benefited from the suggestions of an experienced, wise, and sympathetic adviser.

It seems that the Program Committee and the Project Coordinator made arrangements for the supervision of the grantees about as well as could have been achieved given the constraints, particularly budgetary, and the availability of suitable advisers, under which they worked. A project being designed along these lines today would not necessarily have the same difficulty in providing advisers (SEAPRAP itself has added significantly to the advising potential in the region), and could consequently build provision for a somewhat more elaborate system into the proposal and budget request. The SEAPRAP experience showed that the policy can work. It was also well worthwhile given a chance (and some luck). It deserves more testing and greater support.

5. Although SEAPRAP is widely perceived by those in the population field as a very modestly funded program of astounding success in cost-benefit terms, the perception among its awardees is not of an institution specializing in meager grants. Virtually every awardee interviewed agreed that the amount awarded was quite adequate for the research as proposed. Most grantees worked within their budgets and some had money to return. The number who requested additional funds was very few and, where there appeared to be good reason, some of these requests were granted. Although the maximum grant was advertised as US$7,500, most grants were well below this, usually between US$3,000 and US$4,000. On amounts of this magnitude many grantees mounted quite elaborate research projects, involving significantly large interviewing programs, often employing several interviewers (often their own or fellow students) and paying for computer processing of their data.

Frequently mentioned was the prompt, efficient, and fair way the SEAPRAP office handled the financial aspects of the awards. Particularly applauded was the SEAPRAP policy of giving grantees relatively large proportions of the total award at one time to administer as they saw fit. The faith in the grantees' maturity, responsibility, and honesty implied was usually rewarded by just that kind of response.

INSTITUTIONAL ARRANGEMENTS

The Home Base

Although SEAPRAP was initially located administratively in IDRC, the first Project Coordinator was an IDRC appointee, and the proportion of the cost assumed by the Ford Foundation was made as a grant to IDRC, this was taken from the beginning of the project to be an interim arrangement. In the minds of several of the people involved in the running of the program, the objective of locating SEAPRAP in a Southeast Asian institution was an important goal. This certainly applies to members of the Program Committee and the regional staff of the Ford Foundation. The Rixhon report supported the idea of the move provided SEAPRAP was going to be extended for a sufficient period to make it worthwhile, although the degree of local support could not be described as strong. Rixhon states that only three of the 28 resource persons interviewed suggested that the administration of SEAPRAP be relocated in a Southeast Asian institution, and that the level of enthusiasm of these few "vocal" scholars for this idea was related to the desire to "localize" the program rather than to any dissatisfaction with the way IDRC

was handling it. Even this degree of support lessened somewhat as Rixhon pointed out that the Program Committee ran the Program and that its location in IDRC was more a matter of convenience than an indication that it was "an IDRC program."

Nevertheless, it was subsequently decided to move the Program to the Institute of Southeast Asian Studies (ISEAS), identified in the Rixhon report as the only appropriate institution with the administrative capability and wide range of contacts. Another additional advantage for the decision to move the administration of the Program to ISEAS was the opportunity to share administrative costs with the Southeast Asian Studies Program (SEASP), which was also being administrated by ISEAS. The Project Coordinator's salary and other costs were shared by the two programs and the "savings" were used in both cases for additional activities within the two programs.

In any event the move seems to have been beneficial to the Program. The Rixhon report noted fears that the Program would be insulated due to too much influence by the government of Singapore, or the National University of Singapore, on the Institute. These fears, however, seem to have been unfounded. Certainly the location of the Program in Singapore met with almost universal approval. Several grantees and others interviewed mentioned that Singapore itself benefited very little in terms of grants from SEAPRAP (three only). They appreciated its central location, efficient communications, and also its being a fellow Southeast Asian nation so that while giving the Program an international status, it still retained a local "feel."

The Program Committee

The Committee, already described briefly in connection with the establishment of the program as the "Consultant Group," has drawn a uniform chorus of praise from all who have come into contact with it. Although I have never had the opportunity to see them in action, a lack I feel very much, I know them all as individuals and have had the opportunity to examine the results of their work for SEAPRAP. To the paean of approval I would add my own extremely favorable impression of their contribution to this truly pioneering effort at multi-national academic research support.

I should also record the great assistance members of the Committee gave me during the fieldwork involved in preparing this report in their own countries. I understand that the Coordinators also benefited greatly from the willingness of the members to assist SEAPRAP in this way.

While agreeing with what has been said, in the Rixhon report for instance, about the skill of the Program Committee in running such a successful program, there seems little point in repeating it here, except to note that their record of unusual success and cooperation continued at a similar level after 1977. My role should be to make additional points which seem to have bearing on the Program and, if possible, come up with suggestions or constructive criticisms.

Rixhon noted, "Each member, as expected, is different in personality, culture, academic background, and ideas, yet throughout the years they have successfully managed these differences to form a spirited team working very smoothly together." The replacement of Professor Iskandar after his death by Dr Masri Singarimbun does not seem to have altered this happy situation. This spirit, in transcending the potential problems of background, training, and nationalism, and emerging as an excellent example of true regional cooperation is an especially precious item and every effort should be made to keep it intact and active.

As part of their obligations to the Program the need for self-perpetuation had been earlier and more urgently recognized. Both the Committee members and Foundation staff have spent a considerable amount of time in the last two or three years trying to interest the United Nations Funds for Population Activities (UNFPA), United States Aid for International Development (USAID), and others in funding a continuation of

SEAPRAP. The possibility of getting consulting help from persons outside the Committee was even considered, although it is doubtful that more knowledgeable assistance could have been provided than that already available, both within the Committee and among its external supporters. The major problem has been the reluctance of most agencies to support programs rather than projects, and their unwillingness to give real responsibility to the professional community in Southeast Asia. The avenue by which the earlier grants were obtained was a particularly easy one, and the renewals up to a total of six years seem to have been obtained with little more effort. It should also be noted that the skills and traditions of "grantsmanship" are not well developed in Southeast Asia, or even in the European (as opposed to American) systems, from which most of the countries involved have derived much of the pattern for their own institutions of higher learning. Only the Philippines is excluded from this generalization. Toward the end of the Program the Committee and the Program Coordinator did turn their full attention to designing a similar but modified program and raising funds for it but, to my knowledge at present, not with any success in these admittedly parsimonious times.

The Project Coordinator and the Project Office

When SEAPRAP moved to ISEAS, the staff of the Project Office, Dr Pedro V. Flores and Ms Julie Hui, remained the IDRC and a new staff had to be sought. Dr Wilfredo F. Arce was appointed in 1978, and Ms Suzanne Mak joined SEAPRAP as Program Assistant-Secretary. In January 1980, Ms Mak resigned to take a more permanent position in another institution, and Ms Carole Leong, Clerk-Stenographer for the SEASP, assumed the duties. In July 1981, Ms Leong also resigned and Ms Maggie Chong took her place. Dr Arce's term was completed in October 1981, and he was replaced by Dr Jesucita Sodusta. From this account of too frequent staff changes, the impression could be taken that the work of the Program was seriously impaired. This, however, was not the case. From my own experience I judged the office to be well organized and efficient. This was also the continuing impression of the grantees with whom I spoke in the field. The records of the Program seem to be comprehensive, well maintained, and easily available through the filing system.

Dr Arce maintained the strenuous schedule of field visits begun by Dr Flores and this contributed to the quality of the proposals and the maintenance of contacts and supervision in the field, and to the general positive attitude to SEAPRAP found throughout the region. The cost of this travel, included in the administrative overhead of the Program, may strike some as very high, but it is impossible to overstate the importance of personal contact in the administration of a program of this sort in Southeast Asia.

The duties of the Program Coordinator included:

- administering ongoing grants;
- maintaining contacts with awardees in the field and handling academic as well as administrative and fiscal matters relating to their grants;
- reviewing new applications and preparing recommendations for the Committee's review;
- handling arrangements for the Program Committee meetings, keeping records, and preparing a report of and for each meeting; and
- preparing the final research reports for inclusion in the SEAPRAP Research Report series.

Toward the end of the Program, Dr Arce was also burdened with the task of preparing formal proposals for a new program to succeed SEAPRAP. This process got underway following the meeting of the Program Committee in November 1979, although preliminary work, such as contacting likely donors, had begun a year earlier.

It needs to be emphasized that both the administrative positions are half-time so that essentially all the administrative work of SEAPRAP is accomplished with only the equivalent of one person per year. Although this arrangement contributed to the laudibly low overhead costs of the SEAPRAP project, it was insufficient in some important ways. This is a matter I shall return to later in the report.

Making the Awards

The process of recruiting proposals was one which was all-important to the success of the program. The methods used included visits to appropriate institutions, mainly universities and research institutions, by the Project Administrator who met groups of interested people, explained SEAPRAP to them and followed up any promising leads so gained, and interviewed likely applicants. This seems to have been the surest way of securing high quality, appropriate, and usually well-advised applications. Linkages between the applicants, a prospective adviser, institutional head, and SEAPRAP could often be established on the spot and the applicant started out "on the right foot," from the beginning. The major disadvantage was the relatively high cost involved in travelling and the time the Project Administrator had to be absent from the home office. The sending of brochures and application materials utilizing a comprehensive mailing list was also a well-used method, as was the publication of advertisements for SEAPRAP grants in the regional mass media and in journals. This was a necessary activity, but was not as directly effective as the personal contact method. The design of this advertising campaign was well done and knowledge of SEAPRAP appeared to be widespread among the clientele aimed at; this was certainly the case in the institutions I happened to visit or be associated with in the 1974-1980 period. This included the East-West Population Institute, Honolulu, where we have had several SEAPRAP alumni as our own grantees, e.g., Rowe Cadeliña, and have had other grantees apply for SEAPRAP grants to supplement doctoral field study, e.g., Ida Mantra and Anchalee Singanetra, who were unsuccessful for policy-related reasons, and some who have applied subsequently to their degree work with us, e.g., Haris Mudjiman. Other institutions where I worked or visited during the period, and in which SEAPRAP seemed to be a fact of life among the young professionals, included the University of Malaya, Universiti Sains Malaysia, Universiti Kabangsaan Malaysia, the Population Institute at Universitas Gadjah Mada, and the Institute of Population Studies at Chulalongkorn University. The disadvantage of this advertising campaign is, as Dr Flores noted in his Evaluation Report, that the quality of the applications was often poor as many applicants were not really conversant with the forms and customs of successful grant applications.

The use of personalized letters to potential resource persons and supervisors, who thus became linked into a SEAPRAP network, was another successful technique and over its lifetime SEAPRAP developed a very useful coverage of this type. The work of the individual Program Committee members in their own countries is also known to have been very effective in recruiting suitable applicants, and their knowledge of the human resources among young social scientists within their own countries proved invaluable to the Program. One of the more promising developments was word of mouth from successful and satisfied applicants to their often more junior friends and colleagues, e.g., Eduardo Matura through Rowe Cadeliña at Silliman University. However, six years is a rather short time for this approach to develop as fully as it might over a longer period.

Over the 12 rounds, as was noted by the Project Administrator, there was a tendency for the number of applications to decline. While this is true to the extent that the first round netted 59 applications while the last received only 28, it is also true that the steepest decline was between Rounds I and II. After the initial backlog, or the attraction of something new had had its effect, the decline was relatively slight, from an average of about 36 in Rounds II-V to about 31 in Rounds VIII-XII. This suggests that

SEAPRAP's mission was far from complete by 1981 and that adequate numbers of applications should have continued for several more years. A change in emphasis, a widening in scope, or the inclusion of a second, higher level of awards for SEAPRAP alumni, as suggested by Rixhon, could all have very easily altered the picture in a positive way. Within the totals the sub-totals from each country showed quite dramatic changes from round to round but without a very significant pattern. Final appearances, such as that Thailand was increasing its share of the total number very significantly, while Indonesia was decreasing almost as dramatically, could easily be transitory were the program to continue.

The process of selection was the major concern of the Program Committee which made the decisions based partly on the members' appraisal of the project administration, according to the policies on selection as they evolved, but principally on their own judgement, knowledge of the systems from which the applicants were drawn, and their appraisal of the quality of the application itself. Deliberations on the applications absorbed a considerable proportion of the Committee's time in its meetings held twice a year (May and November).

Criteria on which the decisions were based do not seem to have been formally drawn up prior to the operation of the Program but usually followed these lines:

- The quality of the research proposal should be acceptable, i.e., focused, non-trivial, innovative.
- The topic should be relevant to the population field.
- The applicant's qualifications, background, knowledge of relevant literature, and professional capacity should be adequate. His methodology should be sound.
- Appropriate supervision for the study proposed should be available.
- The work plan should be realistic and well-conceived. It should include a supporting budget.
- The applicant should have an established connection with an academic institution in the Southeast Asian region where he/she may be expected to continue working after completion of the SEAPRAP grant.
- The applicant should be under 35 years old and a citizen of a Southeast Asian country.

Candidates would be working preferably on an independent report for SEAPRAP. Degree scholars, particularly those working for a degree at a foreign university or involving international travel costs, are to be given lower preference.

The Committee took a flexible and liberal view of most of the applications, and in special cases where it seemed to be worthwhile, awards to scholars not meeting all of the criteria were made. Multiple awards were possible at least early in the program but not at all usual, there being only one case where two awards were given to the same person (Rounds II and V). Awards were also made to "teams" in a few cases, i.e., more than one person.

COMMITMENT AND CONTINUATION: SEAPRAP'S EFFECT

Since at the time of writing not all of the grants have expired, it is impossible to come to a final conclusion about completion rates and levels of continuation in and commitment to the population field on the part of SEAPRAP alumni. At the time of the first evaluation, the record was exceptionally good (only three out of 29 grantees appeared to have "slipped"). While the number of grantees not completing or not working in a population-related field has undoubtedly risen (the first evaluation covered only the first five Rounds) the overall record continues to compare very favorably with the experience of most other grant-giving agencies. Currently it looks as if Indonesia will finish with the best national record of completion. Only three percent of all Indonesian grants given has not been completed. In programs of this kind some cases of non-completion are

inevitable and will be out of any possibility of control. In one case a grantee met with a fatal accident. In another the grantee developed psychological problems which prevented the completion of the project. In some of my own interviews with the grantees it became obvious that he/she was no longer involved with population activities, either teaching or research. Such cases are in the extreme minority, however. Much more frequently, the SEAPRAP award was the beginning of, or a further step toward, a useful and, in some cases, an already distinguished career within the discipline. Several grantees have gone on to further degree studies overseas at population training programs such as those at the Development Studies Program, Australian National University, Canberra; the East-West Population Institute, Honolulu; Louvain University, Belgium; and the Cairo Demographic Center, United Arab Republic.

Quantitatively and qualitatively there is no doubt that the SEAPRAP program will be found, when the final reports are in, to have been an extremely effective way of building demographic research expertise in the region. It will have achieved this at an astonishingly low cost and with little slippage. This perception of the Program is virtually universal among the grantees, supervisors, and informed observers of the Program who were interviewed. However, the gathering of precise and comprehensive data on this rather important aspect of SEAPRAP is beyond the scope of this report and may be better achieved, if necessary, by the Project Administrator.

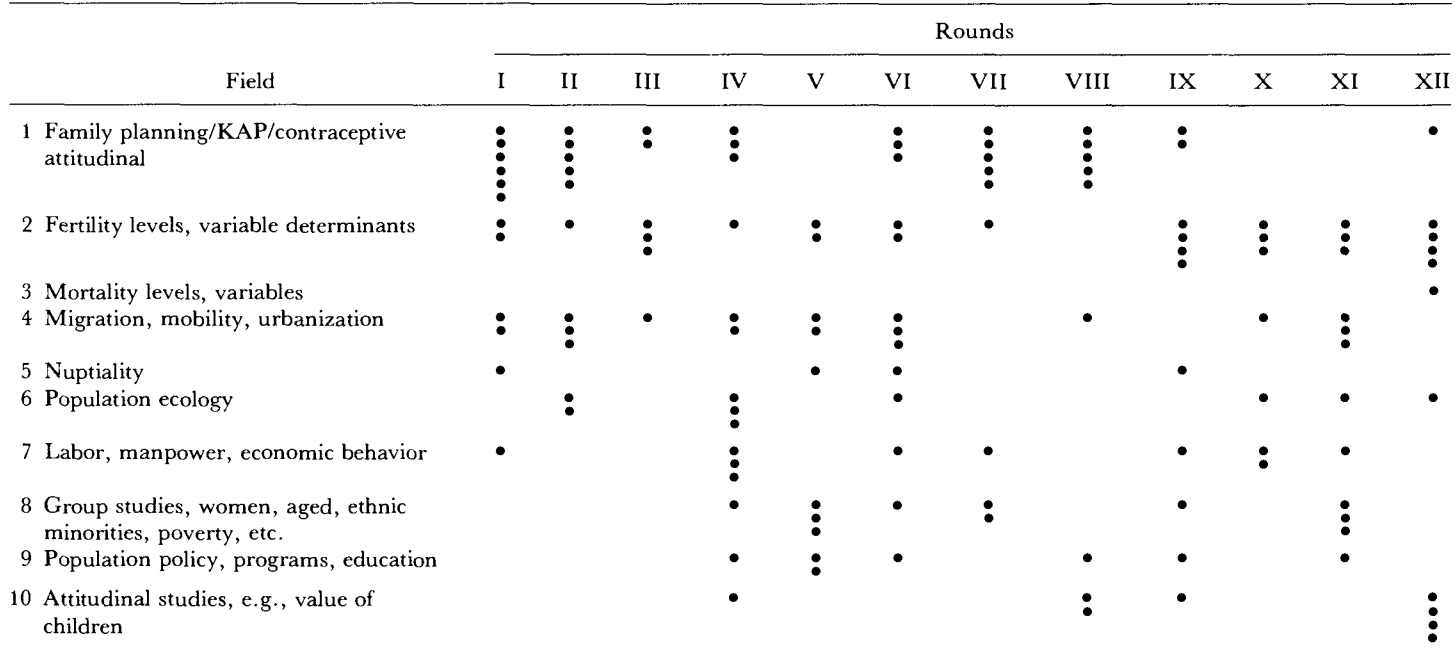
Another matter needs to be laid to rest here. This is the allegation heard in the region from time to time, particularly from academics not involved in population, concerning their fears that scholars are induced to "bend their careers" in favor of population research by the availability of support such as what SEAPRAP offers. It will be true that at the point in a career when directions have to be chosen a scholar will sometimes be prompted to choose a supported program rather than one offering nothing. This is what programs of the SEAPRAP type are supposed to achieve. Population studies is new to social science and its development has had to await certain developments. The availability of data, derived from censuses, for instance, and the advent of electronic data processing capable of handling the vast amounts of information collected are characteristic only of the period following World War II. Population is too important a matter to be neglected merely because it does not fit into pre-existing institutional support structures. External support of the style provided in the region by SEAPRAP and other programs is a legitimate and necessary method of inducing greater interest in population and faster growth of institutional capability within a region capable of handling the related problems. Not one case was discovered in which an applicant deliberately or cynically embarked upon a research project for merely financial reasons rather than those of interest or professional advancement. Certainly there were cases where interest in population prior to the award of a SEAPRAP grant was thin or peripheral but that, as a result of the research program, the awardee had developed a greatly enhanced identification with the field. Of greater hazard to the ramifying potential of SEAPRAP's contribution in the institutions of the region is the occasional tendancy of administrators to assign young staff to work in areas where their past training, including that in population, becomes peripheral or irrelevant.

THE RESEARCH PRODUCT

While it is well recognized that the most important product of the SEAPRAP enterprise was to be the enhancement of human resources related to training in the field of population, there is also the research output to be considered. In any event it is difficult to separate these two and, in this instance, they should probably be thought of as closely related. There is little good in training associated with the production of poor research.

Over the six-year life of SEAPRAP there was some movement in the subject or themes researched under the Program. This is illustrated in Figure 2, where the research topics

FIGURE 2
SEAPRAP Research Topics, Rounds I-XII



are grouped under ten headings. It was difficult to classify some reports, for they sometimes addressed more than one of the themes so that the assignments are occasionally rather arbitrary. Nevertheless, the overall impression given is valid enough. Interestingly, the "drift" in the topics chosen reflects a similar movement in the field as a whole. Perhaps this was stimulated by the reappraisal forced on demography as an academic discipline by the criticisms to which it was subjected, frontal and implicit, at the United Nations World Population Conference in Bucharest in 1974.

An early preoccupation with "family planning/KAP/attitudes to contraception" (Field 1) withered over time so that toward the later rounds of the Program the number of projects on this topic was low. Appropriately enough, given its importance in the region, the general interest in fertility was maintained throughout. Mortality, by contrast, may be said to have been neglected. While not related perhaps to problems of the same magnitude as fertility or migration, mortality scarcely deserves the neglect it suffered at the hands of SEAPRAP's grantees. Most countries in the region are in the throes of a mortality transition which is scarcely yet complete and the matter remains much more than of historical importance. Morbidity was also virtually ignored. Nuptiality, population ecology, manpower, and economic demography were at an appropriate level and well-distributed. Case studies of identified groups such as women, the aged, the poor, and ethnic minorities, together with population policies, education, and attitudinal studies such as the value of children, appeared principally in the topics chosen in the later rounds.

It is difficult to know how to ascribe the influences working in this disciplinary transition, to the grantees themselves or to their supervisors, or to SEAPRAP itself, working through the Program Committee, the Project Coordinator, and their promotional efforts in the region. Whatever the mix, it reflected a change in the discipline itself with which the SEAPRAP system shows itself to have been in gratifyingly close touch.

The publishing program of SEAPRAP was organized around a SEAPRAP Research Report Series, which my most recent count gives as having circulated 34 reports. Several more are in process. As 73 completed reports have been submitted, an existing backlog of some 39 reports has accumulated. With various degrees of probability, up to 51 more reports are likely to be submitted in the future. It seems inevitable that something over 100 reports, from the 124 grants made, will eventually be completed. So far SEAPRAP has published or has intentions to publish about 40 reports, which will appear in the SEAPRAP Series, plus another selected group of about 12, which Dr Arce intends to edit and condense for a single volume. In all it will appear that only about half of the output will ever see the light of day outside a filing cabinet in Singapore. It may be argued that this proportion of published reports reflects the quality of the reports themselves and that the unpublished reports are those of lesser quality. This is certainly not always the case, and does not apply at all to the more recently received reports. The published reports have been variously greeted. Mr Rixhon noted that some of his informants classed them as "uneven" in quality. This they are, but then so is every other research series with which I am familiar. In general I would describe their quality as "considerably better than could have been expected," given the problems of background, training, and language involved. Since there is a relative scarcity in the region of empirical studies of population, based frequently upon detailed fieldwork and the gathering of primary data, my opinion is that a report would need to be of strikingly poor quality to justify its non-publication in any form.

When a young Southeast Asian scholar goes through the process of making an acceptable application for a grant, conscientiously utilizes the money in an original data-gathering exercise, and writes up a report with reasonable promptness usually under some degree of expert supervision, he/she may reasonably expect the sponsoring agency

to publish the result if this is within the admitted scope of their activities. Young academics *need* publication. While the situation in most Southeast Asian systems of higher learning is not exactly "publish or perish," a published report is still a most welcome addition to the *vitae*. Most grantees interviewed certainly have this attitude, and made their applications to SEAPRAP with this expectation. Many of them in July 1981 still expected that their reports would eventually work their way through SEAPRAP's publication system. I did not have the precise information but perhaps more important, the heart, to disabuse them of this notion. In general this aspect of SEAPRAP's performance, related to "Objective No. 3" has been, one suspects from the beginning, the most ambitious, controversial, and, as Flores put it in his 1977 assessment, "least satisfactory in performance and achievement."

Bearing in mind that the SEAPRAP organization is in the process of winding down, and that population-related research is not in a class which improves with keeping, it may nevertheless be useful to review the processes by which this situation arose, without seeming to be "beating a dead horse," so that future programs, if any, can benefit from SEAPRAP's experience.

The original policy of the SEAPRAP Program Committee was to publish all reports, and in 1975 the first ones which were submitted began to appear in the series. By the time the Rixhon report was completed (1977) 21 reports had been published, so that most of the publishing activity has been concentrated in the later phases of SEAPRAP's life. It is apparent that quite soon in the process, the Committee and, possibly, the first administrator had doubts about the wisdom of the publications policy. The difficulties of translation in the case of the Indonesian reports, particularly getting good "social science-oriented" translations promptly and at reasonable cost, were raised at an early stage. This was not a problem with the reports from other countries but the matter of editing and checking the standard of English certainly was. As one who has spent many hundreds of hours working on the research output of students from the region (both in Honolulu and Kuala Lumpur) I have a sympathetic understanding of the magnitude and the difficulty of the task. However, I would add that I regard this time as well spent and the results worthwhile. SEAPRAP's output so far has been perfectly acceptable — even praiseworthy. What should be apparent, however, is that the program was never adequately provided with the resources which would have been necessary to allow its publications program to match the success of its other activities. To have done this would have required building into the grant additional funds to cover the costs of a full-time editor and publications officer, preferably a professional social scientist with a wide population background. This would have been necessary at least for the final three years and would have been additional to the half-time administrator and secretary. Such an appointee could have designed a publications program to fit the various needs of the SEAPRAP constituency, i.e., the grantees, the Program Committee, the grant-giving agencies, and the academic institutions of the region and, under the system which finally evolved, possibly the most neglected groups, the policy makers and planners in the SEAPRAP region.

The form which this publication program might have taken could have been based on a two-tier arrangement. This could have involved *all* reports in a fairly informal "Working Paper" format, with some editing by the SEAPRAP Secretariat, but not to the degree necessary to bring the papers to final publication for international distribution and not involving translation. This would have meant that most Indonesian reports would have been circulated only in the home country, a disadvantage which cannot easily be circumvented.

Distribution of these working papers could have been quite limited, but would have been sufficient to constitute "publication" and ensured their availability to those particularly interested, even internationally. They could also have provided the basis for

seminars, reviews, critical appraisal by fellow academics, and, if appropriate, later revision. Included in the distribution lists would have been previous and current SEAPRAP grantees.

Response to the receipt of SEAPRAP reports by grantees was overwhelmingly positive in my experience. Several mentioned how stimulated they had been by specific reports and also how interesting and useful those from grantees in neighboring countries were. Given the high cost, particularly of imported books and periodicals, and the low salaries of most Southeast Asian academics (Singapore and Malaysia partially excepted), the effect of this donation of a report series on regional population problems to all SEAPRAP grantees has not been adequately recognized. A few grantees suggested that they had not been receiving later reports.

A second tier of publication could have arisen out of the first. This series would have been confined to those which, preferably in the opinion of external reviewers, were worthy of publication in a final typeset form. They would have been subject, if necessary, to heavy editing, condensation, and translation into English where appropriate. This series would have been of a selected proportion of the original reports, and would have carried a worthwhile measure of additional prestige, particularly in the eyes of SEAPRAP grantees.

A system such as this would have met the need for raising the quality of population research by providing models to which SEAPRAP grantees could aspire, in a competitive sense, while at the same time providing a satisfactory form of publication as an outcome of all completed grants. SEAPRAP would have been in the position of rewarding excellence, but not being seen to punish or neglect the less worthy. The additional cost of such a system would not have been insignificant, but would scarcely have been at a level to jeopardize SEAPRAP's reputation as a well-administered lean program. The product, particularly in the selected series, might have commanded more attention than the existing series seems to have done. The printing would need to have been considerably larger than the extremely modest 150 copies run for the existing series.

The reasons for the adoption of the more modest and less complete publication program appear to lie far back in the formulation of the program policies. Since SEAPRAP was an innovative notion in its time, with little precedent to fall back on, the expectation of what level or quality of research could be expected from the target group was not well developed. Besides, this aspect was taken as secondary to the more important matter of research training. Nevertheless, an impression developed in my mind that the donor agencies and more particularly the Program Committee had expectations which were unnecessarily modest. One member of the Committee, for instance, mentioned to me that he thought that the members of the Committee were "swayed too much by wanting quality reports," and also that while the original idea had been to publish everything, he perceived that the low quality of some reports caused the Committee some embarrassment and that this policy was revised to provide publication for only the better ones. My impression was also that the criteria used by members of the Committee were related, perhaps subconsciously, to modern international standards. Flores, in his account of the implementation of Objective No. 3, stressed how "small" the projects were, and the youth, inexperience, and "provincial" background of the awardees (not even technically true in a significant proportion of the awards). He did not expect much useful output (in terms of policy relevance at least) and hoped this did not sound "defensive." More than one member of the Program Committee echoed these attitudes on the quality of the research output.

My response to this would be that those involved with SEAPRAP have good reason now to assume a greater level of confidence in the abilities of young Southeast Asian scholars to produce creditable and useful work in the population field. However, their work should be judged by comparison with the best demographic work produced within

the region rather than with the quality ascribed to the products of the major centers of population research in other parts of the world.

That population research done in the institutions of Southeast Asia meets local and regional needs is vastly more important than what anyone in Canberra, London, Ann Arbor, or even Honolulu, thinks of it. Population research in the Southeast Asian countries has come a long way in a short time, and all those who have had a hand in achieving this, and I would hope I could be included in this group, can be proud of the achievement. SEAPRAP has played an innovative, well-conceived, and largely successful role in this. My only reservation would be that although SEAPRAP was willing to "gamble", as Rixhon puts it, in seeking out promising junior researchers and putting its money on them, it stopped short, far too short, of betting enough on their output.

To their credit some of the more adroit grantees have contrived to have their reports published by other bodies and have bypassed the SEAPRAP bottleneck. In most cases this was an in-house outlet in the grantee's own institution, e.g., Dr Syahruddin at Andalas University, Padang. In some cases, e.g., Dr Apichat Chamratrithirong, Mahidol University, Bangkok, they even managed to get the report revised and edited, through an external review process, and published in a well established journal.

The other area in which the Program Committee showed some want of daring is in the matter of bringing policy implications resulting from SEAPRAP-sponsored research to the attention of those involved with policy and planning in the various governments of the region. This was originally a specified aim of the program laid out in the third of the major program objectives, but was abandoned after the first evaluation as "unrealistic." Given SEAPRAP's level of administrative support this was almost certainly true. It is also true, however, that many of the research topics completed under SEAPRAP auspices would have had useful policy implications and that this is recognized by the authors. Several of the grantees interviewed raised this matter along with the implied complaint that no notice was being taken of their potential contribution. This problem was seen as related to their relatively lowly status rather than with any intrinsic problem with the research itself. There is probably some basis for this perception. Although it is true that the research done by scholars with the modest backgrounds and experience of most SEAPRAP grantees should not be used uncritically as providing a base for national policy development, it can well provide the first insights needed which can be followed up later for elaboration and verification. At the implementation of policy level several of the studies had useful things to say about how well (or more often how poorly) a policy was working out in a specific case. Some had suggestions, either specifically or by implication, for changes in procedures of policy implementation.

It was unrealistic to expect the SEAPRAP office as set up to do much about presenting the findings of the various reports in a form digestible by government policy implementers. The work involved in doing this could be substantial and would only have been feasible if a full-time academic editor/research administrator, preferably with more experience in policy development, had been provided as part of the SEAPRAP administration. Similarly, it is too much to have expected members of the Program Committee to have become involved in preparing material of the type needed. They do, however, collectively and individually, possess the "clout" needed to ensure that appropriate attention is obtained from the key people when policy findings are presented. In any event, I believe that this did occur in a few cases but on an informal and individual basis.

In this connection I was surprised to note that both Rixhon and Flores reported that some of the people in agencies most likely to be interested, Family Planning Boards for instance, complained that the reports were too technical in approach and language. If this was an actual and widespread problem it would seem to be one which should have

been approached internally by the agencies rather than laid at SEAPRAP's door. My experience with these bodies, admittedly rather limited, did not leave me with the impression that this was actually an important or durable issue.

OF THE FUTURE

It would be a mistake to imagine that the work that SEAPRAP began is now completed. Although the 125 grants have very obviously been of assistance in improving the competence, raising the confidence, and boosting the enthusiasm of young scholars now located in most of the population-related institutions and university departments in the region, this number is scarcely adequate to meet the need.

A measure of need felt for SEAPRAP-like activities lies in the degree to which country-based programs have been developed in some instances which complement or supplement SEAPRAP. The Population Research Training Program in Indonesia, which develops and supports practical training programs for population researchers and assists in the development of Population Centers throughout the country, is a case in point. It is supported, incidentally, by the two SEAPRAP donors, plus UNFPA and USAID, and organized out of the Population Institute at Universitas Gadjah Mada.

Another research support program is the Microlevel Studies Program on Population and Development Interactions. Based in Thailand and funded by IDRC, one of the SEAPRAP donors, it is intended apparently to support somewhat more advanced research. Applicants who have had SEAPRAP grants are specifically encouraged to apply.

However, neither of these programs duplicates SEAPRAP, since they are tailored more specifically to the level of development achieved in each country relative to its needs in population research. It is imperative, therefore, to reassess where SEAPRAP would fit into the larger picture and how it is likely to evolve over these next years.

Most informants, both prospective applicants in each country and senior researchers and administrators, saw a great need for the continuation of a SEAPRAP-like program. Frequently cited was the need for a regional program serving young researchers in Southeast Asia. In addition the advantages of regional exposure, impartiality, and greater insulation from local academic politics were seen as being of greatest value in having a SEAPRAP-like alternative. They did not see the possibility of having their own local programs, such as those noted in Indonesia and Thailand as a substitute for SEAPRAP, but rather as supplementary. SEAPRAP was seen as supplying the needed multinational exposure for young Southeast Asian scholars without the necessity of competing at this stage in a completely open international system. The ability to do this at a later stage may be an objective of SEAPRAP-like regionally based grants, which are particularly useful in providing an appropriate level of multinational exposure at a crucial stage in the development of young Southeast Asian academics. That several SEAPRAP grantees have gone on to higher studies, in doctoral programs in major metropolitan universities for instance, or have since risen to international prominence in the population field, is a demonstration of this effect. For most prospective SEAPRAP grantees an open international, competitive system through which research funding may be sought, dominated by American academics for instance, remains a daunting prospect from which they have few expectations of success. An initial and successful experience with SEAPRAP goes a long way in removing such doubts and frequently has the effect of widening their contacts and their experience, thus making the possibility of collaborative research with regional or even international colleagues of similar interests more likely.

For Southeast Asian scholars at the beginning of their academic careers, a SEAPRAP-style program continues to be a highly desirable and needed source of research support. SEAPRAP has had a prestige derived from its multinational character which the local programs cannot have. The monetary and academic support is only a part of the benefit

that SEAPRAP has been able to bestow on its successful applicants. To have met and survived the requirements of a multinational and competitive system gives confidence a boost and makes it more probable that a young scholar will continue to perceive research as a rewarding pursuit.

SEAPRAP also has had the advantage of being perceived as independent of the education hierarchies in each of the countries of the region. Applications are made directly to SEAPRAP; negotiations are conducted with the SEAPRAP administration. Frequently the Program Coordinator and the country representative on the Program Committee are seen as benign and helpful friends. The possibility that the SEAPRAP system was anything but entirely fair, impartial, and scrupulously administered was never even raised during the interviews I conducted. Its independence and its even-handedness was highly valued by young academics, many of whom seemed to see their own institutions in a light a good deal less bright. At the same time, that SEAPRAP was a program run by Southeast Asians, working together, entrusted with the responsibility of an multinational but somehow non-alien program was also appreciated.

The system by which SEAPRAP has been run so successfully obviously has lessons for other programs. The model is one which could be more widely used and adapted profitably for other purposes. The ability of the Committee and the Coordinators to have a remarkably sure "feel" for what would work under Southeast Asian conditions was undoubtedly the major benefit, but the "legitimacy" with which they endowed SEAPRAP as an authentic example of regional cooperation was almost as important. The remarkable level of cost-effectiveness achieved — unique, I believe, in an international program — was another major benefit.

For these reasons I am surprised and grieved that it has proved so difficult to find the means to replace SEAPRAP with a similar program, utilizing the experience, pattern, and perhaps even the "chemistry," of the existing Program Committee. It must be that the fault lies with those agencies which could fund population activities in the Southeast Asia region, but in this case seem not to be able to get themselves together to perpetuate this excellent work. Is it myopia, arterio-sclerosis, or unconsciousness? Are they so entangled in self-inflicted regulations that nothing can be achieved in this deserving case? Whatever the problem, the niche that SEAPRAP filled persists. We shall be fortunate if it is occupied again by a program as distinguished as SEAPRAP has been.

Appendix C

SOUTHEAST ASIA POPULATION RESEARCH AWARDS PROGRAM GRANTEES (1974-1980)

ROUND I

Mr Aske Theo Komalig
Fakultas Pertanian
Universitas Sam Ratulangie
Kampus UNSRAT
Manado, Indonesia

Dr Luechai Chulasai
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Drs Murdiyanto Purbangkoro
Faculty of Economics
Universitas Negeri Jember
Jember, Indonesia

Mr Fong Kwok Yuen
Population Studies
Economic Planning Unit
Kuala Lumpur, Malaysia

Ms Antonieta Ig. E. Zablan
Regional Training Center for
Rural Development
Visayas State College of Agriculture
Leyte, Philippines

Dr Penporn Tirasawat
Institute of Population
Chulalongkorn University
Bangkok, Thailand

Drs Agus Salim
Lembaga Demografi
Universitas Syiah Kuala
Banda Aceh, Indonesia

Miss Pavala R. Velu
Department of Social Work
Hong Kong University
Pokfulam Road, Hong Kong

Mrs Brigida Jayme
Population Center Foundation
Manila, Philippines

Drs Sutaryat Trisnamansyah
School of Education
IKIP Bandung
Bandung, Indonesia

Mr Eliseo de Guzman
Population Institute
University of the Philippines
Manila, Philippines

Ms Nilda Castro
Center for Urban Studies
De La Salle University
Manila, Philippines

ROUND II

Miss Sarojini P. Singham
Singapore Family Planning &
Population Board
Singapore

Dr Fong Chan Onn
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Mr Kanoksak Kewthep
Faculty of Social Sciences
Mahidol University
Bangkok, Thailand

Dr Suwanlee Piampiti
School of Applied Statistics
National Institute of
Development Administration
Bangkok, Thailand

Mr Sanit Wongprasert
Tribal Research Center
Chiangmai, Thailand

Mrs Alma T. Junsay
Rizal Memorial Colleges
Davao City, Philippines

Mrs Maswida Tanius
Faculty of Law
Andalas University
Padang, Indonesia

Mr Jimmy Balacuit
Department of Sociology
Mindanao State University
Marawi, Philippines

Drs Gawi Salampessy
Faculty of Teachers Training
Pattimura University
Ambon, Indonesia

Mr Michel Rumbiak
Faculty of Teachers Training
Universiti Cenderawasih
Irian Jaya, Indonesia

Dr Bernadette Setiadi
Faculty of Psychology
University of Indonesia
Jakarta, Indonesia

ROUND III

Drs Soebandi
Faculty of Economics
Brawijaya University
Malang, Indonesia

Mr Chamnong Boonchoo
Department of Political Science
Chiangmai University
Chiangmai, Thailand

Mrs Orrawin Trocki
Home Economics Department
Srinakarinwirot University
Bangkok, Thailand

Drs Hasan Mangunrai
Kompleks Perumahan Dosen Unhas
Ujung Pandang
Sulawesi Selatan, Indonesia

Drs Firman Pelawai
Pusat Penelitian Kependudukan
Usu Medan
Kampus Usu Medan
Sumatera Utara, Indonesia

Drs Masud Hiliry
Faculty of Economics
Syiah Kuala University
Banda Aceh, Indonesia

ROUND IV

Mr Haris Mudjiman
Research Division
University Negeri Surakarta
Surakarta, Indonesia

Mrs Valaiporn Kangsanant
Faculty of Management Sciences
Prince of Songkla University
Haad-Yai, Thailand

Mrs Sherry Jane Gonzalez-Marbella
Ateneo de Manila University
Manila, Philippines

Mr Promboon Panitchpakdi
Southeast Asian Ministers of Education Secretariat
Bangkok, Thailand

Miss Young Mei-Ling
Development Studies
School of Social Sciences
Universiti Sains Malaysia
Penang, Malaysia

Miss Yew Yeok-Kim
Statistics Department
(Bahagian Kira-Kira Negara)
Kuala Lumpur, Malaysia

Mr Charoon Vitiprod
Applied Scientific Research Corporation of Thailand
Bangkok, Thailand

Dr Jomo K. Sundaram
Department of Economic Development & Planning
National University of Malaysia
Selangor, Malaysia

Mr Rowe Cadelina
Research, Extension & Development Division
Silliman University
Dumaguete City, Philippines

Mr Tan Keng Sooi
Singapore

Dr Thiravet Pramnuanratkarn
Department of Sociology & Anthropology
Chulalongkorn University
Bangkok, Thailand

Mr Soeharsono Soemantri
Center for Research & Development of Health Services
Ministry of Health
Surabaya, Indonesia

Dr Prapapen Suwan
Health Education Department
School of Public Health
Bangkok, Thailand

Mrs. Magdalena Cabaraban
Research Institute for Mindanao Culture
Xavier University
Cagayan de Oro City, Philippines

Miss Ooi Giok Ling
Department of Geography
University of Malaya
Kuala Lumpur, Malaysia

ROUND V

Mr Abduljim Hassan
College of Arts & Sciences
Mindanao State University
Marawi City, Philippines

Drs Sunarto, HS
FKIS, IKIP Yogyakarta
Kampus Karangmalang
Yogyakarta, Indonesia

Dr Apichat Chamratrithirong
Institute for Population & Social Research
Mahidol University
Bangkok, Thailand

Dr Fong Chan-Onn
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Dr Peerasit Kamnuansilpa
Research Centre
National Institute of Development Administration
Bangkok, Thailand

Miss Lori Taclob
Philippine Business for Social Progress
Davao City, Philippines

Drs Mohammad Aslam Sumhudi
Faculty of Social Sciences
University of Indonesia
Campus Rawamangun
Jakarta, Indonesia

Mr Adnan Abdullah
Faculty of Teachers Training
Syiah Kuala University
Banda Aceh, Indonesia

Dr Stella Quah
Department of Sociology
National University of Singapore
Singapore

Drs Aspon Rambe
Faculty of Economics
Lambung Mangkurat University
Banjarmasin, Indonesia

ROUND VI

Drs Yusmilarso Wiroatmodjo
Facultas Sosial-Politik
Diponegoro University
Semarang, Indonesia

Miss Sulochana Nair
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Mr Syoib Machmud
Faculty of Economics
Sriwidjaya University
Palembang, Indonesia

Mr Albert G. Gomes
Department of Sociology & Anthropology
University of Malaya
Kuala Lumpur, Malaysia

Drs Hadi Sabari Yunus
Faculty of Economics
Gadjah Mada University
Yogyakarta, Indonesia

Miss Jamilah Ariffin
Faculty of Economics & Management
Universiti Kebangsaan Malaysia
Bangi, Malaysia

Mr Jose Fidel Lim
Model City Population Planning Project
Office of the City Mayor
Cagayan de Oro City, Philippines

Ms Uraivan Tan Kim-Yong
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Mrs Teresa Almonte
Research Institute for Mindanao Culture
Xavier University
Cagayan de Oro City, Philippines

Dr Afdol
Faculty of Law
Airlangga University
Surabaya, Indonesia

Dr Chee Kim Loy
Centre for Policy Research
Universiti Sains Malaysia
Penang, Malaysia

Mr Bidhya Bowornwathana
Faculty of Political Science
Chulalongkorn University
Bangkok, Thailand

ROUND VII

Drs Bariman
Faculty of Social and Political Sciences
University of Jember
Jember, Indonesia

Mr Thongchai Shusuwan
Department of Economics
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Mrs Churee Chullakesa
Faculty of Social Sciences
Kasetsart University
Bangkok, Thailand

Drs Sayuti Nasution
Universitas Sumatera Utara
Lembaga Kependudukan
Pusat Riset dan Pengabdian Masyarakat
Medan, Indonesia

Mr Dej Karnjanangkura
Department of Economics
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Dr Chavalit Siripirom
Faculty of Management Science
Prince of Songkla University
Haad-Yai, Songkla, Thailand

Mr Eduardo Matura
Ibabao Mambaling
Cebu City, Philippines

Miss Teofista Polestico
Research Institute for Mindanao Culture
Xavier University
Cagayan de Oro City, Philippines

Miss Loh Lee Lee
Kuala Lumpur, Malaysia

ROUND VIII

Miss Bencha Yoddumnern
Champaign, Illinois, USA

Dr Lee Kiong Hock
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Drs Munir Hasan
Lembaga Demografi, Fakultas Ekonomi
Universitas Syiah Kuala
Banda Aceh, Indonesia

Dr Oratai Charoensilp
Faculty of Social Sciences & Humanities
Mahidol University
Bangkok, Thailand

Mr Somsak Piansakool
Office of Interior Policy & Planning
Ministry of Interior Bangkok, Thailand

Drs Sugito
Population Institute, Faculty of Economics
General Soedirman University
Central Java, Indonesia

Mrs Vickie V. Flores-Tolentino
Dansalan Research Center
Cagayan de Oro City, Philippines

Ms Yupa Supakul
Department of Mass Communication
Faculty of Humanities
Chiangmai University
Chiangmai, Thailand

Dr Satit Niyomyaht
Department of Sociology & Anthropology
Thammasat University
Bangkok, Thailand

ROUND IX

Drs Paiman Soeparmanto
Ministry of Health
Centre for Research & Development of Health Services
Surabaya, Indonesia

Dr Mingsarn Santikarn
Department of Economics
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Mr Alan B. Feranil
Population Institute
University of the Philippines
Manila, Philippines

Mrs Esperanza A. Dowling
Kaya Research & Training Center
Quezon City, Philippines

Drs Warisa R.A.M.
Fakultas Sosial dan Politik
Kampus Universitas Tanjung-pura
Kalbar, Indonesia

Dr Peerasit Kamnuansilpa &
Dr Suntaree Komin
Research Centre
National Institute of Development Administration
Bangkok, Thailand

Miss Madeleine A. Sembrano
The Ala-Ala Foundation
(Jose Antonio Delgado Memorial Foundation, Inc.)
Manila, Philippines

Mr & Mrs Reoma
Office of Population Studies
University of San Carlos
Cebu City, Philippines

Dr Pradit Charsombut
Faculty of Economics & Business Administration
Kasetsart University
Bangkok, Thailand

Mr Chalee Pongjarearn
Bangkok, Thailand

Miss Tippan Navawongs
Faculty of Social Sciences & Humanities
Mahidol University
Bangkok, Thailand

ROUND X

Ms Elisea S. Adem
Research Institute for Mindanao Culture
Xavier University
Cagayan de Oro City, Philippines

Mr Said Rusli
Bogor Agricultural University
(Institut Pertanian Bogor)
Bogor, Indonesia

Mrs Sonia Imperial
Social Survey Research Unit
Ateneo de Naga
Naga City, Philippines

Miss Laddawon Rodmanee
Bangkok, Thailand

Mr Donald Lee Lye Poh
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Drs Syahruddin
Institute for Regional Economic Research
Department of Economics
Andalas University
Padang, Indonesia

Mdm Tai Ching Ling
Department of Sociology
National University of Singapore
Singapore

Miss Cecilia M. Ruiz
Population Institute
University of the Philippines
Manila, Philippines

ROUND XI

Dr Pichit Pitaktepsombati
Institute of Population Studies
Chulalongkorn University
Bangkok, Thailand

Dr Sieh Lee Mei Ling
Faculty of Economics & Administration
University of Malaya
Kuala Lumpur, Malaysia

Mrs Thelma Abiado-Gicole
Panay State Polytechnic College
Capiz, Philippines

Misses Celia O. Carlos &
Vivian T. Albarracin
Quezon City, Philippines

Mr Isagani V. Fernandez
Office of the Community Extension Program
La Salle College
Bacolod City, Philippines

Miss Phang Siew Nooi
Faculty of Economics
University of Malaya
Kuala Lumpur, Malaysia

Mr Zamroni
FKIS, IKIP Yogyakarta
Kampus Karangmalang
Yogyakarta, Indonesia

Mr Montri Pekanan
Bangkok, Thailand

Mr Pisit Sukreeyapongse
Faculty of Environment & Resource Studies
Mahidol University
Bangkok, Thailand

Mr Prachid Na Bangchang
Department of Political Science
Faculty of Social Sciences
Chiangmai University
Chiangmai, Thailand

Mrs Somsong Anamarn
The Bureau of Policy & Planning
Bangkok, Thailand

ROUND XII

Mrs Rosalinda Sanchez-Castiglioni
Department of Psychology
Ateneo de Manila University
Quezon City, Philippines

Drs A. Latief Wiyata
Faculty of Social & Political Sciences
Jember State University
Tegalboto, Indonesia

Mrs Suda Bhiromkaew
Department of Sociology & Anthropology
Faculty of Social Sciences
Kasetsart University
Bangkok, Thailand

Mrs Sirinapa Jamornmarn,
Mr Jumrang Ngerndee, &
Miss Bung-on Chingulgitnivat
Department of Psychology
Faculty of Social Sciences
Kasetsart University
Bangkok, Thailand

Mr Pinit Pitchayakan
Tribal Research Center
Chiangmai, Thailand

Miss Rattanaporn Pulpinyo
Obstetric and Gynaecological Nursing Department
Faculty of Nursing, Mahidol University
Bangkok, Thailand

Dr Wilawan Charanyananda
Supervisory Unit
Teacher Education Department
Ministry of Education
Bangkok, Thailand

Dr Anchalee Singhanetra-Renard
Department of Geography
Chiangmai University
Chiangmai, Thailand

Mr David C. Cabriles
Department of Applied Rural Sociology
Central Mindanao University
Bukidnon, Philippines

Miss Lita C. Palma
Research Institute for Mindanao Culture
Xavier University
Cagayan de Oro City, Philippines

Dr Venancio B. Ardales
Social Science Research Office
Central Philippine University
Iloilo City, Philippines